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CARS · SHOP EQUIPMENT · TRUCKS · AVIATION · PARTS · ACCESSORIES · TIRES

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NEW CAR SALES IN SOUTH SHOW LARGE INCREASES

Business Holds to High Levels Through to End of 1929

NEW YORK, Jan. 23.—As complete returns of passenger car registrations in the Southern States are received, it is clear that business held to a high level right through to the end of 1929 and that all of the states in that section of the country will report substantial increases in 1929 over 1928.

One of the states in which it was doubtful whether 1929 registrations of new cars would exceed those of 1928 was Florida. Complete returns for the year show that the total sales last year, as indicated by actual registrations, amounted to 38,303, as compared with 36,225 in 1928, a gain of 2,078 units, equal to 5 per cent.

Three other states have reported complete 1929 registrations. They are Missouri, North Carolina and Louisiana, which show gains ranging from 11 per cent. in North Carolina to 34 per cent. in Louisiana.

Here are the registrations by states for 1929, as compared with 1928:

	1929	1928
Missouri	114,025	95,471
North Carolina	64,171	57,607
Louisiana	43,472	32,508
Florida	38,303	36,225
Totals	259,971	221,811

The four states registered an increase of 38,160 units in 1929 over 1928, equivalent to 16 per cent.

The states made exceptionally good records in December, with North Carolina, Florida and Louisiana registering increases over the

(Continued on Page 2)

FOUNDATION LAID FOR NORTH DAKOTA M. T. A.

Fargo, N. D., Jan. 23.—Informal organization of the North Dakota Motor Trades Association was effected Wednesday night at a meeting held in the offices of the Pence Automobile Company, when about fifty automobile men from the eastern section of North Dakota were present.

Formal organization will be completed about February 15, when a meeting of fifteen directors named Wednesday will be held. At that time a program will be outlined, officers elected and definite steps taken toward making the association a permanent group, working to the benefit of North Dakota dealers, it was stated by those in charge.

A. Benson, secretary of the Minnesota Motor Trades Association, conducted the meeting.

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AUBURN SALES IN 1929 INCREASE 90 PER CENT.; BEST GAINS IN CITIES

Auburn, Ind., Jan. 23.—Auburn led all other cars in its price class in increased volume of sales in 1929, R. H. Faulkner, vice-president of the company, announced today. The actual gain for the year was in excess of 90 per cent. over 1928.

Faulkner called attention to the significant fact that the gain was made possible primarily by increased sales in the cities where there were already the most Auburn owners.

Cities which made unusual per cent. increases in Auburn sales in 1929 were: New York city, 162 per cent.; Philadelphia, 129; Boston, 142; Cleveland, 59; Los Angeles, 57; Pittsburgh, 103; Hartford, 135; Newark, 166; San Francisco, 148; Buffalo, 37; Minneapolis, 145; Rochester, 254; Albany, 58; St. Louis, 31; Detroit, 211; Kansas City, 101; Syracuse, 176; Phoenix, 106; Denver, 79; Chicago, 40; New Orleans, 40; Des Moines, 200; Tacoma, 205; Miami, 250; Columbus, 260; Dayton, 207; Spokane, 230; Tulsa, 56; Connersville, 93, and Cedar Rapids, 194.

Canada shows an increase in Auburn sales of 156 per cent.; France, 185; Holland, 140; Spain, 124; Dutch East Indies, 100; Chile, 47; Brazil, 21; Portugal, 67; Argentina, 30; Mexico, 66; Poland, 141, and China, 400 per cent.

1929 RECORD YEAR FOR TOLEDO MACHINE TOOL

Toledo, O., Jan. 23.—The Toledo Machine and Tool Company had the best year in its history in 1929, officers reported at the annual meeting of stockholders. Large contracts made with the Soviet government are keeping the plant busy at the present time. Present directors were re-elected with Henry J. Hinde as president, Harry E. Collin as vice-president and George W. Greening as secretary and treasurer.

CHEVROLET'S ROAD SHOW BRINGS SALES MESSAGE TO INDIANAPOLIS ZONE

Indianapolis, Ind., Jan. 23.—More than 400 Chevrolet dealers, star salesman of 100-Car Club rank, and bankers were guests of the Chevrolet Motor Company at its fifth annual business meeting and banquet here yesterday.

The Chevrolet showmen, carrying a carload of stage and theater equipment, delivered their 1930 sales message to the Zone 25 dealer organization in the typical manner with stage and film productions.

Headed by H. J. Klingler, vice-president in charge of sales, the road crew spent a busy day with the dealers winding up with a banquet at night at the Claypool Hotel. A. F. Young, regional manager at Norwood, O., and C. P. Fisken, zone manager here, were the principal speakers at the dinner. Prizes were distributed to the salesmen at a meeting held during the morning. The business meeting followed in the afternoon.

The factory officials and the road show crew left here today for Louisville, where another zone meeting is scheduled for tomorrow as a part of the national program in which forty-two sessions will be held.

N. DAKOTA SHOWS TRUCK INCREASES

Passenger and Freight Haulage Figures Gain Sharply in 1929

BISMARCK, N. D., Jan. 23.—That motor trucks are rapidly becoming an important factor in the North Dakota public transportation system is shown by a study made by the State Railroad and Warehouse Commission.

In 1929, the study shows, passenger lines were operating over fifty-two miles of dirt roads, 786 miles of graveled roads and seven miles of pavements in North Dakota.

Motor freight routes were operating over 286½ miles of dirt roads, 220 miles of graveled roads and thirteen miles of pavement. The total authorized mileage for passenger routes was 1,315 and for freight routes 519½.

Thirty-six vehicles were operated over regular motorbus lines and ninety-one vehicles were licensed to carry passengers, but not on regular routes. Fifteen vehicles were used in motor transportation of freight on fixed routes and 109 were authorized to transport freight in the vicinities of various towns and cities.

The investment of passenger bus routes was $167,724.61 and of freight routes was $36,204.22, while operating revenues were $178,441.74 and $44,203.10, respectively. Class B operators, those not running over fixed routes, reported collections of $14,075.82 for passenger service and $75,680.24 for freight service. Operating expenses of Class A passenger lines were $165,496.29 and of Class A freight lines $29,547.01. Class B passenger operators reported expenses of $5,959.27 and Class B freight operators spent $25,421.84.

Passengers carried totaled 179,068, of whom 165,198 were hauled by Class A bus lines and 13,870 by Class B lines.

Freight hauled totaled 17,608½ tons, of which Class A lines reported 9,210½ tons and Class B lines 8,398 tons.

All passenger vehicles traveled 1,110,317 miles, of which 1,059,315 were over regular routes and 51,002 in intermittent service.

Motor freight vehicles covered 520,943 miles, of which 190,219 were over regular routes and 330,724 in intermittent service.

Whippet Reduces Prices $45 to $50 on All Models

Toledo, Jan. 23.—Price cuts of $45 and $50 on all 1930 Whippet four-cylinder models were announced today by L. A. Miller, president of Willys-Overland Company.

This significant move by Willys-Overland makes the Whippet four-door sedan the lowes priced of all four-door sedans built in America and is particularly important in indicating the trend towards greater economy, with the benefits being passed on to motor car purchasers in the low price range. It indicates the recognition by leading manufacturers of the fact that economy and thrift will be considered as never before by motor car purchasers this year and gives a new importance to the four-cylinder car.

New Whippet prices are:—

Sedan	$585
Sedan de Luxe	645
2-Passenger Coupe	525
4-Passenger Coupe	555
2-Passenger Roadster	475
4-Passenger Roadster	505
Coach	525
Collegiate Roadster	545
Touring	475
Commercial Chassis	360

FRONT-WHEEL DRIVE TO HOLD SPOTLIGHT OF S. A. E. TODAY

Riding Comfort, Inventions Also Will Be Discussed

ENGLAND URGES METAL 1-PIECE BODY MOUNTING

Summer Meeting at French Lick Springs, May 25-29

DETROIT, Jan. 23.—Front-wheel drives, riding comfort and inventions will feature the sessions tomorrow at the annual meeting of the Society of Automotive Engineers, which has been in progress all week at the Book-Cadillac here.

The front-wheel drive session will be held in the afternoon with T. J. Little, Jr., chairman. Papers will be delivered by William Muller of New Era Motors, on "Front-Wheel Drive," and Joseph Ledwinka of Edward G. Budd Manufacturing Company on "Bodies for Front-Wheel Drive Cars."

In the morning there will be a riding comfort session and an inventions session. At the former session, papers to be delivered include "Rilding Qualities," by Dr. Fred A. Moss, George Washington University; "Elimination of Chassis Vibration," Earl H. Smith, Olds motor Works, and "Shock Absorbers," Prof. J. M. Nickelson, University of Michigan. N. F. Hadley, Chrysler Corporation, will lead the discussion, and W. R. Griswold will serve as chairman.

"The Work of the New Devices Committee of the General Motors Corporation" will be the paper featuring the inventions session. W. J. Davidson, General Motors Corporation, will deliver the paper and there will be a discussion led by George L. McCain, Chryser Corporation. John Warner will be in the chair.

The papers to be read by Earl H. Smith, William Muller and Joseph Ledwinka will be found on other pages of this edition of Automotive Daily News.

Dates for the annual summer meeting of the S. A. E. were announced today as May 25 to 29. The summer meeting will be held

(Continued on Page 5)

FRANKLIN PROFITS IN 1929 INCREASE 102%

Syracuse, N. Y., Jan. 23.—At a meeting of the stockholders of the Franklin Automobile Company here today a 102 per cent. increase in profit for 1929 over 1928 was reported.

A total net profit of $1,123,112 for 1929, as against $555,020 for 1928 showed that profits for this automobile company had increased even faster than shipments, which showed a gain of 86 per cent., or 14,432 cars, as against 7,770 cars the year previous.

Dividends paid on preferred and common stock amounted to $983,331, leaving a net credit to consolidated surplus of $139,781. This compared very favorably with 1928 when a charge of $110,304 was made to consolidated surplus.

Value of sales in 1929 was $26,746,862 and in 1928 amounted to $16,378,336, a gain in dollar volume of 63 per cent.

All subsidiary companies showed a profit. The formation of the Franklin executive holding corporation was ratified. This company will furnish extra incentive to key men, through participation in profits, for the further growth of the company. An increase of 98 per cent. for 1929 was reported for exports.

The election of the heads of the various divisions of the Franklin Manufacturing Company as directors was a feature of the meeting.

Increased sales and profits were accredited to the unusual interest in air cooling by motorists, H. H. Franklin, president, reported.

A certain amount of the surplus earnings of the Franklin company above a fixed percentage earned on the capital stock will be paid into the holding company for reinvestment in Franklin common stock. Amount of capitalization and other details of the new corporation have not yet been made public.

The new directors elected at the meeting are L. J. Purdy, head of the manufacturing division; E. S. Marks, head of the engineering division, and J. E. Williams, head of the sales division.

Mr. Purdy was elected second vice-president, and Ralph Murphy moved up from that position to the post of first vice-president, formerly held by Giles H. Stillwell, chairman of the board, who is retiring from many of his business activities.

GOODRICH-MILLER BASIS OF EXCHANGE ANNOUNCED

Akron, Jan. 23.—In the acquisition of the Miller Rubber Company, the B. F. Goodrich Company will exchange one share of its common stock for eleven shares of Miller common and between seven-tenths and eight-tenths of a share of Goodrich preferred for one share of Miller preferred, it was announced today.

CHEVROLET TOLEDO PLANT STARTS NIGHT PRODUCION

Toledo, Jan. 23.—The Chevrolet Motor Company's plant here, devoted exclusively to the manufacture of transmissions, has gone into night production. It is expected that by February 1 approximately 2,100 persons will be employed, according to C. D. Moore, general manager.

LEATHER BELTING MEETING TO BE HELD ON FEB. 6

New York, Jan. 23.—Manufacturers, distributors and users of leather belting will meet in Room 1105 of the Engineering Societies Building at 29 West 39th St., on February 6, at 10.30 a. m.

ALABAMA DEALERS FAVOR LICENSE LAW CHANGES

Montgomery, Ala., Jan. 23 (UTPS).—The Alabama Automotive Trades Association in its mid-winter session here elected A. R. Pryor of Birmingham as president. Members of the executive board elected are, S. E. Mabry of Troy, Ted Brownell of Birmingham, Reese Adamson of Birmingham, and John Todd of Mobile.

The association adopted resolutions favoring the exemption of automobiles and other motor vehicles from all ad valorem taxes in the state, recommending that the motor vehicle tag act be amended to provide that at the end of October of any license year the license be paid only for the remaining months, and that the acts governing motor vehicles be amended so that licenses would remain as part of the vehicle should the vehicle be sold.

Birmingham was selected for the summer meeting, which will be held in June.

New Car Sales Up Sharply In South

INCREASES OF 5% TO 34% SHOWN

Four States Register Aggregate Rise of 16%

(Continued from Page 1)

corresponding month of 1928 and Missouri showing only a slight loss. This is a much better record than is being made in most of the other sections of the country. December sales generally having been below a year ago.

Here are the December sales for the four states:

	1929	1928
Missouri	3,240	3,404
North Carolina	3,605	3,060
Louisiana	1,857	1,791
Florida	2,469	2,397
Totals	11,231	10,652

In Missouri most of the 1929 gain over the preceding year was accounted for by Ford, with an increase of 24,053, due largely to the fact that Ford was not in production in all of 1928. Six other makes of cars, however, showed increases for the year. They were Whippet, 809; Oldsmobile, 341; Plymouth, 1,543; Graham-Paige, 421; De Soto, 835, and Packard, 92. These increases are taken only from among the twenty leading sellers in the state.

Even more makes of cars showed gains in Missouri in December over the corresponding month of last year, with Chevrolet showing the way with an increase of 218 units. Ford was next with 217 and the other gains were Plymouth, 21; Graham-Paige, 21; Hupmobile, 15; Marmon, 4; Pierce-Arrow, 8, and Peerless, 2.

In North Carolina six makes of cars out of the leading twenty showed gains in 1929 over 1928. They were: Ford, 14,879; Plymouth, 934; De Soto, 569; Graham-Paige, 205, and Marquette, 280, the latter not having been in production in 1928.

December was an excellent month in North Carolina, with ten makes of cars showing gains over the corresponding month of 1928. They were: Ford, 304; Chevrolet, 483; Chrysler, 37; Plymouth, 8; De Soto, 4; Hudson, 13; Nash, 5; Graham-Paige, 16; Marquette, 19, and Hupmobile, 1. Sales of miscellaneous cars gained fifteen units.

Out of the sixteen leading sellers in Louisiana in 1929, nine showed gains over 1928 as follows: Ford, 10,343; Chevrolet, 1,857; Pontiac, 29; Plymouth, 578; De Soto, 466; Oldsmobile, 9; Graham-Paige, 182; Hupmobile, 30 and Hudson, 75.

December gains were made in Louisiana by Chevrolet, 403; Pontiac, 17; De Soto, 15; Hupmobile, 13; Graham-Paige, 1, and Hudson, 4.

In Florida 1929 gains over 1928 were made as follows by the leading makes: Ford, 5,867; Chevrolet, 50; Graham-Paige, 263; Plymouth, 370; De Soto, 255, and Marquette, 152.

December gains in Florida were: Chevrolet, 370; Hudson, 12; Graham-Paige, 8; Packard, 7; Oldsmobile, 5; La Salle, 15; Reo, 3; Pierce-Arrow, 8; Willys-Knight, 3.

MISSOURI

Following are the complete 1929 sales of the twenty leading makes of cars in Missouri in 1929, as compared with 1928:

	1929	1928	Gains
Ford	39,640	15,587	24,053
Chevrolet	26,537	29,361	..
Whippet	7,345	6,536	809
Essex	5,004	5,276	..
Pontiac	4,507	5,494	..
Buick	3,793	4,813	..
Dodge	3,419	3,810	..
Oldsmobile	2,917	2,576	341
Nash	2,318	2,656	..
Plymouth	2,064	521	1,543
Durant	1,689	2,538	..
Studebaker	1,561	1,718	..
Chrysler	1,488	3,107	..
Grahm.-Pge.	1,427	1,006	421
Hupmobile	1,124	1,263	..
Hudson	1,122	1,183	..
De Soto	1,066	231	835
Willys-Knght.	874	885	..
Packard	801	709	92
Oakland	791	1,112	..

Following are the new passenger car registrations in Missouri in December, as compared with the corresponding month in 1928:

	1929	1928	Gains
Ford	1,207	1,301	..
Chevrolet	598	381	217
Dodge	365	147	218
Buick	131	210	..
Essex	106	145	..
Whippet	98	204	..
Pontiac	71	208	..
Studebaker	64	64	..
Plymouth	56	35	21
Oldsmobile	53	71	..
Graham-Paige	51	30	21
Nash	51	101	..
Durant	45	46	..
Hupmobile	42	27	15
Packard	41	43	..
Chrysler	33	60	..
De Soto	26	26	..
Oakland	25	40	..
La Salle	19	23	..
Franklin	17	19	..
Marmon	17	13	4
Hudson	16	51	..
Willys-Knight	15	23	..
Pierce-Arrow	13	5	8
Cadillac	11	20	..
Marquette	11	*	11
Peerless	11	9	2
Miscellaneous	47	102	..
Totals	3,240	3,404	†164

* Not in production.
† Net loss.

NORTH CAROLINA

Following are the complete 1929 sales of the twenty leading sellers among the passenger cars in North Carolina, as compared with 1928:

	1929	1928	Gains
Ford	28,261	13,382	14,879
Chevrolet	14,377	17,571	..
Whippet	2,327	3,183	..
Pontiac	2,227	3,543	..
Essex	2,166	2,951	..
Dodge	1,825	2,873	..
Buick	1,779	3,002	..
Chrysler	1,539	2,755	..
Plymouth	1,307	373	934
Hudson	840	843	..
Oldsmobile	805	1,098	..
De Soto	776	207	569
Nash	705	1,015	..
Durant	528	1,205	..
Studebaker	489	626	..
Oakland	453	593	..
Grahm.-Pge.	337	132	205
Marquette	280	*	280
Hupmobile	277	444	..
Packard	251	347	..

* Not in production.

Following are the new car sales for North Carolina in December, 1929, as compared with December, 1928:

	1929	1928	Gains
Ford	1,684	1,380	304
Chevrolet	908	425	483
Dodge	149	187	..
Chrysler	115	78	37
Essex	101	106	..
Buick	89	96	..
Pontiac	86	219	..
Plymouth	67	59	8
Whippet	47	165	..
De Soto	46	42	4
Hudson	43	30	13
Nash	39	34	5
Durant	30	56	..
Graham-Paige	28	12	16
Oldsmobile	28	40	..
Studebaker	22	31	..
Marquette	19	*	19
Oakland	18	25	..
Hupmobile	12	11	1
Packard	12	17	..
Miscellaneous	62	47	15
Totals	3,605	3,060	†545

* Not in production.
† Net gain.

LOUISIANA

Following are the complete 1929 registrations of the sixteen leading passenger car sellers in Louisiana, as compared with 1928:

	1929	1928	Gains
Ford	19,282	8,939	10,343
Chevrolet	11,023	9,166	1,857
Pontiac	1,775	1,746	29
Nash	1,353	1,465	..
Dodge	1,345	2,114	..
Buick	1,082	1,527	..
Essex	886	927	..
Plymouth	856	278	578
Whippet	807	1,449	..
Chrysler	734	993	..
De Soto	635	169	466
Oldsmobile	543	534	9
Studebaker	475	600	..
Graham-Paige	421	239	182
Hupmobile	360	330	30
Hudson	343	268	75

Following are the December, 1929, new car registrations in Louisiana, as compared with December, 1928:

	1929	1928	Gns.
Ford	778	896	..
Chevrolet	476	73	403
Pontiac	74	57	17
Nash	70	85	..
Dodge	54	120	..
Buick	53	99	..
De Soto	48	33	15
Hupmobile	36	23	13
Essex	36	70	..
Plymouth	30	45	..
Studebaker	26	37	..
Oldsmobile	24	25	..
Whippet	24	55	..
Chrysler	23	43	..
Graham-Paige	23	22	1
Hudson	12	8	4
Packard	8	17	..
Willys-Knight	8	9	..
Miscellaneous	54	54	..
Totals	1,857	1,791	*66

* Net gain.

FLORIDA

Following are the complete 1929 new car registrations for the twenty-one leading sellers in the state of Florida, as compared with 1928:

	1929	1928	Gain
Ford	15,942	10,075	5,867
Chevrolet	9,324	9,274	50
Buick	1,529	2,609	..
Essex	1,362	1,576	..
Whippet	1,086	1,267	..
Pontiac	1,025	1,647	..
Chrysler	880	1,534	..
Dodge	841	1,404	..
Nash	684	867	..
Graham-Pge.	669	406	263
Hudson	617	656	..
Plymouth	611	241	370
Oldsmobile	450	540	..
De Soto	374	119	255
Packard	344	400	..
Studebaker	313	644	..
Oakland	271	442	..
La Salle	222	222	..
Marquette	152	*	152
Willys-Knight	152	226	..

* Not in production.

Following are the new passenger car registrations for Florida in December, as compared with December, 1928:

	1929	1928	Gns.
Ford	1,093	1,130	..
Chevrolet	581	211	370
Buick	111	168	..
Essex	76	103	..
Chrysler	55	63	..
Pontiac	54	108	..
Dodge	53	90	..
Hudson	48	36	12
Graham-Paige	42	34	8
Packard	42	35	7
Nash	37	60	..
Whippet	36	76	..
Oldsmobile	29	24	5
La Salle	27	12	15
Hupmobile	26	28	..
Plymouth	25	43	..
Marquette	19	*	19
De Soto	18	29	..
Studebaker	17	43	..
Reo	12	9	3
Pierce-Arrow	10	2	8
Cadillac	9	10	..
Willys-Knight	9	6	3
Oakland	8	38	..
Roosevelt	8	*	8
Miscellaneous	24	41	..
Totals	2,469	2,397	†72

* Not in production.
† Net gain.

110 AUTO-LITE DEALERS END FACTORY INSPECTION

Toledo, O., Jan 23.—C. O. Miniger, president, and Daniel H. Kelly, executive vice-president of Electric Auto-Lite, addressed 110 representatives of the company's central service stations at a banquet in the Secor Hotel here Tuesday night. The banquet marked the end of a two-day session of Auto-Lite men at the factory.

RUSTLESS IRON CORPORATION PLANS LARGE EXPANSION

Richmond, Va., Jan. 23 (UTPS).—The Rustless Iron Corporation of America, Baltimore, is planning a $5,000,000 expansion, it has been learned here. From a pioneer industry in 1926 this company has invaded many fields.

Better Road Maps

The New 1930 Idea
Vacation Tours for Motorists

A 32-page colorful and descriptive auto road atlas, specially designed for vacation motoring. Shows 14 carefully planned motor tours and maps covering the Eastern United States and parts of Canada. Information includes places of scenic beauty, historic and educational interest, suggested overnight stops, road and traffic conditions, etc. Recreation is the main consideration of Vacation Tours for Motorists.

Automobile Dealers

Give your customers this superior road atlas with your advertisement on front and back cover. They will appreciate it. (Carries no other advertising). 500 copies with your "ad." $80. Lower prices on larger quantities. For price quotations and descriptive circular, write

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SPARKS from DETROIT

Everything Fine, Says Pulcher

* * *

Klingler Meets Hoover

* * *

Exodus to Chicago

Fred Kingsbury—Detroit Editor

MARTIN V. PULCHER, president of the Federal Motor Truck Company, was walking through the lobby of a Detroit hotel the other afternoon. He did not appear to be in a great hurry, so I accosted him in the hopes of getting a good news story. I remarked that he seemed very happy and, at that remark, he beamed on me.

"I haven't a single thing in the world to complain about," he said. "Everything is moving along smoothly, the truck business is good, we are making money, my health is good and everything seems to be all right."

Drawing him out, I discovered that it was just twenty years ago that Mr. Pulcher organized the Federal Motor Truck Company, which was a huge success from the start. It seems that during all those twenty years his company has never failed to pay a cash dividend and, in all, $4,000,000 has been paid to stockholders during that time.

The plant has been expanded from time to time, until now it covers a half-million square feet of floor space. The body plant, covering 60,000 square feet of floor space, is one of the most modern in the country.

"Do you know," Mr. Pulcher went on, "we have been a very happy organization. Today we have the same directors we had when we organized with the exception of those who have died. That is one of the most pleasing things. Of course, it is a matter of great satisfaction to me that we have never missed a cash dividend. That is a record."

Mr. Pulcher is at his office every day working hard. He has always been a great student of the truck industry and keeps his fingers on the pulse of the business every minute.

We are inclined to think that the great success of his organization is due to the fact that he is on the job all the time and knows practically every worker in his plant by his first name.

* * *

H. J. KLINGLER, vice-president and general sales manager of Chevrolet, is taking a very active part this month announcing plans and policies of his company to the many Chevrolet dealers throughout the country, and he is participating actively in many meetings.

In "getting over" this year's message to the dealers and salesmen he has arranged a series of skits and playlets which are being acted out before large gatherings of dealers and the plan has proved very effective.

The other day Mr. Klingler was down in Washington to attend a dealers' meeting and he met President Hoover and discussed the outlook of the motor car industry for the year. He told the President he was in accord with the plan for continued industrial activity, and also told the chief executive that Chevrolet had stepped up its scheduled production for January.

* * *

There is an exodus of automobile executives from Detroit. Nearly all of them are on the way to the Chicago Automobile Show, where they will hold conferences and meet automobile distributors and dealers from all over the country. Inquiry reveals that a considerable number of these executives plan to leave Chicago after the show closes and make trips through the West as far as the Pacific Coast, studying industrial conditions.

* * *

Lieut. William O'Connell of the Trumbull police station in this city is looking for a cat, and is prepared to offer the feline a very attractive proposition. It seems, the other day Lieut. O'Connell, reaching into a drawer, felt a mouse run up his sleeve. By the time he managed to get rid of the rodent he had performed all kinds of contortionist acts. Hence his search for a cat.

* * *

It was 7 degrees below zero in Detroit the other day, but policemen say that did not deter motorists from using their automobiles. Just as many were on the streets as though it was 70 above.

* * *

John Edwards, well-known Detroiter and president of the Wayco Oil Corporation of this city, has been elected to the board of directors of the Valvoline Oil Company. Mr. Edwards has been prominent in affairs in this city for a number of years.

Production -- Engineering -- Factory

Paper on 'Elimination of Chassis Vibration,' Read To S.A.E. at Detroit Today

Earl H. Smith, member of the Society of Automotive Engineers and assistant chief engineer of the Olds Motor Works, Lansing, Mich., will deliver the following paper on "Elimination of Chassis Vibration" at the riding comfort session of the S. A. E. today in the Book-Cadillac Hotel, Detroit:

THE first fundamentals for obtaining a quiet chassis are correct balance of the rotating and the reciprocating parts, such as propeller shafts, crankshaft, flywheel, clutch, pistons and connecting rods. After all of these units are carefully designed and balanced so as to eliminate vibration due to rotation, a number of sources of vibration still remain, such as crankshaft torsion, engine roughness resulting from combustion-chamber design and compression ratio, and the vibrations are transmitted from any piece of moving machinery, regardless of how well it is built, to which the chassis might attune itself.

This paper will deal with the prevention of the transmission of vibrations from the engine to the chassis, and is a non-technical description of work carried on during the last three years to reduce to the minimum the transmission of vibration at this point in the car. While many theories on the use of elastic materials to absorb vibration have been evolved, only one was investigated as to its application to the problem. The "Insulation of Vibration," by Vern O. Knudson of the University of California, was selected, and in it was found the very interesting fact that the relationship of the elasticity to the dampening coefficient of the mounting material affected the absorption of vibration, and in certain parts changed the absorption to amplification.

In a first analysis of the elimination of transmission of vibration from the engine, two methods were presented: (a) mounting the engine on springs and (b) mounting the engine on rubber. The first method was arbitrarily eliminated and activities were confined entirely to rubber. The initial set-ups consisted of mounting the engine very flexibly on large blocks of rubber at all four points of suspension, the engine being on a four-point mounting. These blocks of rubber were in compression, and when a sufficient mass of rubber was introduced the effect was immediately noticeable in the reduction of the transmission of vibration.

Tension or Compression Type of Mounting

In attempts to further the effectiveness of the absorption of engine noises, we tried rubber in tension, which was not successful with the designs available at the time because of the magnitude of engine movement when driving over rough roads. All activities were therefore concentrated on the compression type of mounting. Engine mountings are undoubtedly available today in which the rubber in tension gives satisfactory results, but our compression type has been so satisfactory that we have conducted no work on the other.

Among the compression types of mounting tried were large blocks of rubber on which the engine rested and was held down by a bolt passing directly through the rubber or by studs embedded in each side of the rubber block. Other mountings tried consisted of flat pancake types in which the height of the rubber was small in relation to the lateral dimensions. All of these mountings allowed too much engine movement, those without the through bolt allowing both vertical and horizontal movement and those with the bolt-hold-down construction allowing too much horizontal movement.

The excess movement of the engine was very undesirable, because it manifested itself through excessive movement of the gear shift and brake levers, the clutch and the brake pedal, all of these units being mounted with the power plant. In addition to this, however, excessive engine movement caused crystallation of the gasoline lines and of the exhaust pipe and also caused difficulty with breakage of the top tank of the radiator where the inlet hose to the radiator transmitted the engine movement to the radiator core.

The fundamental problem then presented itself of developing a mounting of the compression type, which had a sufficient mass of rubber so that, with a specified unit-pressure on the rubber, hardness would not build up to such an extent that excessive vibration was transmitted and also with the rubber so disposed of that more than normal engine movement would be eliminated. After analyzing the various types of mounting tried, we realized that a successful compression mounting must have a large area of contact with the engine and with the engine bracket on the frame so as to reduce the unit stress in the rubber, and also that this area of rubber must be disposed of so as to prevent engine movement due to driving over rough roads.

Developing Satisfactory Mounting

Conical types of mounting, with the rubber in compression, were tried, but eventually we evolved the present Olds mounting, in which a piece of rubber in the shape of a flat-topped pyramid is utilized. The engine leg inclosed the top and the sloping faces of the block. The vertical thickness of rubber was one inch and the horizontal dimensions were $2\frac{1}{4} \times 2\frac{1}{4}$ inches. The block was a truncated section of a pyramid and the longer of the two lateral dimensions was placed crosswise of the car. This was done because we found by many road experiments that the engine did not need as much rubber in the front as in the rear, and, with a very small mass of rubber in the front, the front of the engine was comparatively rigidly mounted as far as horizontal movement was concerned; therefore, the only possible movement of the rear of the engine in a horizontal direction was crosswise of the car as the engine tried to swing in a circle in a horizontal plane around its front mountings.

Horizontal stability thus being gained, thought was given to vertical engine stability. A bolt was passed through the engine leg, the rubber mounting and the frame bracket and was insulated on the upper side of the engine leg by a rubber collar and with excessive clearance where it passed through the engine leg. The bottom of the bolt passed through a flange under the frame bracket which prevented the bolt from moving laterally. The entire design did not allow any metal contact between the engine and the frame, as can be seen from Fig. 1.

Minor refinements in the rubber were worked out in the form of cavities on the bottom face to serve as air chambers. Corrugations in the engine leg where it fitted over the rubber block also helped. Both of these changes were of value in increasing the efficiency of the mounting by making it absorb more vibration. The front mounting consisted merely of rubber washers upon which the engine rested and with a through bolt that was carefully insulated from the engine and the frame so that again no metallic connection was present. This design is illustrated in Fig. 2.

Experiments were then conducted in developing a degree of hardness in the rubber that would render it the most effective vibration absorbent, and in determining how tight the bolt should be which passed through the mounting. At this phase of the development we found ourselves working with such minor improvements in absorption of vibration that we had to develop a means of actually measuring the vibration absorbed by the rubber.

The General Motors Corporation's research laboratories were consulted and the result was an electrical device by which the vibration of the engine and the frame could be measured in electrical units, thereby eliminating the human element in judging the roughness of the car as presented by engine vibration transmitted to the frame. The apparatus consisted of two identical electromagnetic vibration pick-ups, an accurate potential divider and a vacuum-tube amplifier-detector. Two switches were built in with the divider to facilitate the measurement. Each of the two pick-ups consisted of a Baldwin Rival loud-speaker unit, with a specially loaded diaphragm, mounted in a strong and dust-proof case. A very accurate potential divider was obtained by interlocking two Leeds & Northrup resistance boxes so that the sum of their resistance was constant. The amplifier consisted of three stages of resistance-capacity coupled units, with a voltage multiplication of about 3,000, or in other words a radio-amplifying unit.

Vibration Measured Electrically

A very rough analogy can be drawn by comparing the two electromagnetic pick-up devices and the two resistances of the potential divider to the four legs of a Wheatstone bridge, with the radio-amplifying unit taking the place of the galvanometer unit of the bridge circuit. The two electromagnetic units were clamped to the engine leg and the frame adjacent to the engine leg respectively, and a torsional vibration was introduced into the crank shaft at its fundamental frequency by a vibrating unit attached to the front end of the shaft.

This unit was a device of conventional type for instigating torsional vibration, and consisted of a num-

(Continued on Page 5)

Muller of New Era Motors Gives Paper on 'Front-Wheel Drive' to S. A. E. Members

A paper on "Front-Wheel Drive" will be delivered at today's front-wheel drive session of the S. A. E. at the Book-Cadillac Hotel, Detroit, by W. J. Muller of the New Era Motors, Inc., as follows.

IN design of the Ruxton, the problem has not been one of adapting a front drive to a racing car, but one of meeting the demands of an exacting, if not mechanically talented, public. Mechanisms which function well in the hands of the expert have so often proved totally unfit for average use that we need not dwell on the point. For this reason the Ruxton was really built up around a universal joint—a joint which had been years in development, and which, of all those examined, offered what we considered to be two very essential points. The Weiss joint is absolutely uniform in angular movement, even at extreme wheel lock, and this joint functions efficiently under indifferent conditions of lubrication.

As to uniformity of movement, the usual Cardan joint at 30-degree lock gives in each revolution a fluctuation of about 30 per cent. That is, if the drive turns at 1,000 r. p. m. the driven shift operates at speeds varying during each turn from 870 to 1,160 r. p. m. Such performance, even in parking, would make a front drive do funny things. The use of double Cardans, one opposed by 90 degrees to the other, will even out the motion; but then what's the use of complicating the mechanism when a satisfactory joint has already been made available?

The second point, namely that of lubrication, is vital. The Weiss joint has no sliding members; the articulation being made by rolling-ball contacts. Lubrication, while necessary, is reduced to a minimum, and danger of seizing is eliminated.

Some of the foreign designs of front-wheel drives have shown ingenuity with respect to universals, but these seem to be hardly serviceable. When one speaks of a mechanism as being 99 per cent. efficient, it sounds well. However, a 1 per cent. loss in a hundred horsepower job means 42 b. t. u.'s per minute going into heat. This is faster than frictionally engaged parts can usually conduct or radiate. It means that ten pounds of iron are raised 42 degrees Fahrenheit for each minute of application. It means that in less than 10 minutes the oil film flashes; then greater loss of efficiency, greater heat and trouble. This is the reason that the Weiss joint with its rolling-ball contacts has appealed so strongly to us from the start. The Weiss joint really started us in the design of the front-wheel drive. We had been waiting for that joint, or some equally promising one, to develop.

The advantages of front drive have long been recognized, long before any were even built, for, as a matter of fact, somehow it seemed logical to drive by the steering wheels. Of course, we didn't do it at the start for perhaps the same reason that airplanes started out with pushers. Instability of drive soon convinced surviving pilots that things had to be reversed and they were. Most airplanes are tractors today. Things happen faster in the air than on land; advantages and errors become more exaggerated up there. The improved driving stability of a front-wheel-drive car is not so obvious as in the case of the airplane, but it is real, nevertheless, and can be noticed by contrast. All cars in the future may not be "stem-winders," but there will be quite a number of the "stern-wheelers" hooked up in front before many years.

Racing drivers soon found the stability of drive due to "pull" rather than "push." (High speed accentuates these little things.) But we have all become higher speed artists and the public, too, will notice the difference. This stability is not alone due to the "pull effect," but is due, especially in turning, to absolute "tract" of driving wheels. There is none of that "scrubbing" action by which driven rear wheels try to go forward and sidewise at the same time. This action is often erroneously ascribed to Hotchkiss drive. It is true, however, that the freer movement of rear springs does exaggerate the sensation by making the path a series of jumps. The Ruxton has Hotchkiss drive, and with it we have noticed absolute smoothness of turning, especially in the hill country, where a rear-drive car seems to lose speed on up-grade turns. This we have pretty clearly demonstrated, time and time again. It is unquestionably due to the fact that the leading wheels are furnishing the drive.

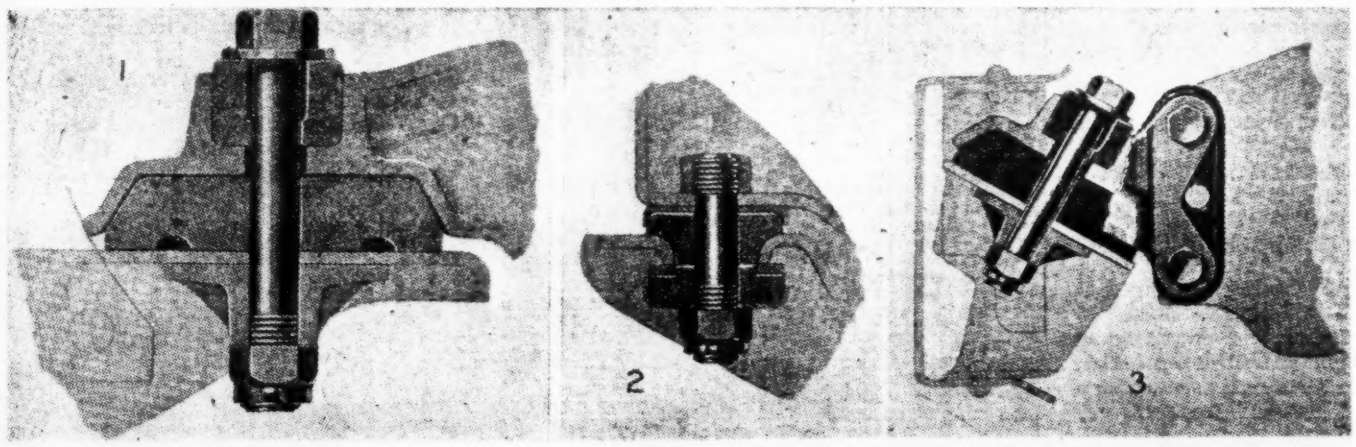
This again manifests itself in parking with sharply "cut" wheels. One has only to imagine the front wheels cut to 90 degrees in order to visualize the rear drive at its worst.

In the Ruxton we have been particularly happy with the steering. Neither shimmy nor wheel fight has been experienced. The drive simply does not enter into steering, at all. This is not necessarily an inherent property of a frint-drive car. On the contrary, a poorly designed and built front could cause more trouble than we care to think about. Realizing this, we have given the front axle probably more thought than the whole rest of the car. It deserves thought, too, for a whole lot of machinery has to be accommodated in a small space. Details of the construction are obvious from available pictures, and I shall not recite them. Suffice it to say that the European practice of placing brake drums adjacent the differential housing has the advantage of economy of space but throws brake torque through the live axles, and we consider this poor practice, since braking torque is several times greater than maximum drive torque.

There is, however, one item of particular interest with reference to our disposition of the drive universals and the axis of the steering knuckle spindles. Our first thought was that the center of the universal must lie absolutely in line with the spindle. We went to some trouble to insure this, and then we found that the early models were so perfectly balanced that the steering wheel was "dead." There was no feel in it. Furthermore, the cars had a tendency to wander. The remedy was simple enough; we simply threw the center of the universal far enough off the axis of the spindles to create a slight drag. One can really go quite far in this direction before driving torque becomes annoying.

Possibly the greatest outstanding departure we have made in the Ruxton lies in the transmission. Obviously, the center of the differential ring gear is on a line between the front wheels. The distance between dash and front axle must house engine, transmission differential and radiator. Unless the driver wants to sit on the rear axle, there has to be some telescoping of units. The severest compacting of conventional units still results in too long a job. Our answer to this is: worm drive, with the worm in the center of the transmission. Net saving, one-half the diameter of ring gear plus one-half the length of differential, or about six inches. The radiator is built around the dif-

(Continued on Page 5)



EXAMPLES OF RUBBER engine mountings that have been developed to eliminate transmission of vibrations from the engine to the chassis. Figure 1—Original truncated-pyramid type of rear mounting in which the engine leg inclosed the top and the sloping side-faces of a rubber block 1 inch high, 2¼ inches long and 4½ inches wide. Figure 2—Washer-type front mounting. Figure 3—Revised form of rear mounting, which is placed at an angle of 30 degrees with the horizontal to maintain engine stability on rough roads. In all three types a through bolt is used to provide vertical engine stability

Automotive Daily News

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Our Debt to the Chemists

MODERN life would be impossible without the contribution which chemists have made to it. There is scarcely anything that we use which chemistry has not made possible. The tall buildings in our cities could never have been built without the chemical treatment of iron to make it structural steel. The clothes we wear owe much of their utility and all their beauty, if they have such, to chemists. Much of our food is treated chemically, and, some commentators would probably insist, not to the advantage of our internal economies.

Our own industry depends probably more on the inventive and adaptive genius of chemists than any other. The metals that we use in automotive manufacture have all been developed by metallurgists, which is just another name for chemists in that particular field. The paints which make our cars attractive are one of the latest contributions of chemistry to industry. The fuels and oils that we use have all been developed by chemists. It was chemistry that developed processes of extracting motor fuel from the crude petroleum in much greater percentage than used to be possible, which has kept us from having an actual shortage of this vital factor in motor vehicle operation.

Some days ago The Automotive Daily News carried the announcement that Dr. Frazer of Johns Hopkins University had announced the invention of a catalystic device which will remove the deadly carbon monoxide from the exhaust products of combustion as it takes place in the modern automobile engine. Stripped of technical verbiage, a catalyst is a substance which acts on another substance and changes its form without being in any way affected itself. This is one of the marvels of chemistry, at any rate to a layman, and yet it is a fairly common reaction. With the motor vehicle in practically universal use and in the hands of numberless thoughtless and careless persons, the danger of carbon monoxide poisoning is becoming a serious one.

In actual operation this catalyst of Dr. Frazer's would be brought in contact with the exhaust fumes from the automobile engine. It would change the by-product of combustion from the deadly carbon monoxide to a harmless gas, which would not even make the inhaler sneeze. And the catalyst, whatever it may be, will not diminish or change its form in the service. This idea would seem to be a considerable contribution to safety in this age of universal motoring. We can score another to the credit of the automotive chemist.

Tires in 1930

IT is estimated in a recent issue of Rubber Age that the tire factories of the United States will have to supply 20,000,000 casings for new equipment and about 60,000,000 for replacements plus 2,000,000 that must be exported. This makes a grand total of approximately 82,000,000 tires. If we allow an average of twelve pounds of rubber per casing and tube we get a consumption of about 440,000 tons of rubber by our tire factories during the year that lies ahead.

The estimate usually made is that tires consume 85 per cent. of all the rubber used in the United States. Granting this we would have a grand consumption here of 515,000 tons.

It is estimated that the total world production of rubber in 1930 will be about 900,000 long tons, and that actual consumption needs will be somewhere in the neighborhood of 830,000 long tons.

During 1929 the tire industry had some difficulties to overcome, but there were certain definite advantages in hand. The markets for both rubber and cotton were stable. The price gyrations of other years did not occur. A tire manufacturer could make plans with some hope that prices would stay where they were. The result has been that, while profits per unit by the tire makers have been lower, a larger number of sales have given the tire men a fairly satisfactory year. The outlook for 1930 is by no means discouraging.

AUTOMOBILE SHOWS IN VARIOUS SECTIONS

New Brunswick, N. J., Jan. 23.—Fifteen local automobile dealers, displaying twenty-four makes of cars are exhibiting to record crowds at the automobile show in the new Sisser Building.

Dealers exhibiting are: W. E. Mount & Sons, Ford; Gross Motor Company, Willys-Knight and Whippet; Beldon-Joiner-Cadillac Corporation, Cadillac, La Salle; De Angelis Brothers, Nash; Russell Chevrolet Company, Inc., Chevrolet; Ellis Motor Car Company, Oakland, Pontiac and Auburn; New Brunswick Buick Company, Buick and Marquette; Spinelli Motor Sales, Oldsmobile; Quality Motor Sales, Inc., Chrysler; Brunswick Hudson-Essex Company, Hudson, Essex; Packard Motor Sales Company, Packard; Newton B. Smith, Hupmobile; G. H. Gilbert, De Soto; J. Arthur Applegate, Pierce-Arrow, Studebaker, Erskine; Suydam Brothers, Marmon and Roosevelt.

Waterbury, Conn., Jan. 23.—Waterbury's Annual automobile show will be held February 17-22, inclusive, under the sponsorship of the local lodge of Elks, at the state armory.

Akron, O., Jan. 23.—Thirty-two automobile firms and twenty-four accessory companies will be represented at Akron's sixteenth annual automobile show, to be held in the B. F. Goodrich Building February 8 to 15.

Davenport, Ia., Jan. 23.—The Davenport Automobile Dealers' Exhibitors Association has announced February 4-7 as dates for the annual show to be held in the Coliseum. A score of dealers will be represented and booths will accomodate about fifty machines. Attendance prizes will be awarded this year to encourage visitors to the show. William Grampp, vice-president, is in charge of arrangement for the show.

Kewanee, Ill., Jan. 23.—The Kewanee automobile show, inaugurated last year, will be repeated this year, February 4-8.

Richmond, Va., Jan. 23.—The Richmond Automoible Dealers Association is making plans for an automobile show at the Mosque during the week of February 10—15 inclusive. The show committee consists of C. G. McKimmie, general chairman; J. B. Alsop, show chairman; L. R. Brown and E. W. Burroughs, finance committee; Julian Fazier, chairman, and W. G. King.

Calgary, Alberta, Can., Jan. 23.—The automobile dealers of Calgary will hold a show in the Armouries Building here, February 27 and 28 and March 1. The Automobile Dealers Association of the province of Alberta will hold its annual convention in the Palliser Hotel, February 28.

Paterson, N. J., Jan. 23.—The Paterson Auto Trades Association's twentieth annual automobile show has drawn record attendances each night this week, with indications so far that sales will exceed 1929 by 40 per cent. Harry M. Smith, president of the association, announced that the value of the exhibit is $200,000. Twenty-one dealers are exhibiting 100 models of thirty-one makes.

Pompton Lakes, N. J., Jan. 23.—The Tri-County Automobile Trades Association meeting yesterday afternoon at the New Paradise Inn heard William James, chairman of the first annual automobile show render a report which showed that about 2,000 persons have visited the exhibition held last week in the Community House at Pompton Lakes. In discussing the show from a business standpoint, it was found that all the dealers had benefited, and it was unanimously decided to have a show next year.

Tacoma, Wash., Jan. 23.—Because of the uncertainty of the weather, the Tacoma Automobile Dealers Association has decided to hold its 1930 Motor Transportation Show at the Tacoma National Guard Armory instead of at the main hangar at the new Pierce county airport. The show will be held from February 13 to 16, inclusive.

UTAH A. D. A. CHARTERED

Salt Lake City, Utah, Jan. 23.—The Utah State Automobile Dealers Association, organized some years ago, filed articles of incorporation this week. Seth H. Blair of the Blair Motor Company, Salt Lake City, is named president, and Carl L. Snow of the Automotive Trades Publishing Company, Salt Lake City, as secretary-manager, among other officers and directors.

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRINGS RESULTS

CALENDAR OF COMING EVENTS

JANUARY

18-25—**Baltimore, Md.** Automobile show.
18-25—**Brooklyn, N. Y.** Motor Vehicle Dealers' Association Automobile Show.
18-25—**Boston Mass.** Annual Automobile Show.
18-25—**Detroit, Mich.** Automobile Show.
18-25—**Harrisburg, Pa.** Annual Automobile Show of the Harrisburg Automotive Trade Association.
18-25—**Hartford, Conn.** Automobile show.
18-25—**Louisville, Ky.** Automobile show.
18-25—**Montreal, Canada.** Automobile Trade Association National Eastern Canadian Motor Show.
18-25—**Pittsburgh, Pa.** Automobile show at Motor Square Garden.
20-23—**St. Petersburg, Fla.** Automobile Show.
20-24—**Montreal, Can.** Garage and shop equipment show.
20-25—**Wilkes-Barre, Pa.** Automobile Show.
20-25—**Huntington, W. Va.** Automobile Show.
20-25—**Nashville, Tenn.** Automobile show at Hippodrome.
20-25—**Rochester, N. Y.** Automobile show
20-25—**Springfield, Mass.** Automobile show
20-25—**Erie, Pa.** Automobile Show.
20-25—**New Brunswick, N. J.** Automobile Dealers' Association Show at Sesser Building.
20-25—**Wilmington, Del.** Automobile Show.
20-27—**Paterson, N. J.** Automobile Show.
21-24—**Detroit, Mich.** Society of Automotive Engineers' Annual Meeting.
25-Feb. 1—**Chicago.** National Automobile show.
25-Feb. 1—**Washington, D. C.** Automobile Show.
25-Feb. 1—**Cleveland, O.** Show at Public Auditorium, auspices of Cleveland Automobile Manufacturers and Dealers' Association.
25-Feb. 1—**York, Pa.**—Automobile Show at Shipley Garage.
26-Feb. 1—**Columbus, O.** Automobile Show.
27-28—**Chicago.** National Automobile Dealers' Association Convention.
27-Feb. 1—**Portland, Me.** Automobile Show.
27-Feb. 1—**Danville, Ill.** Dealer Display Week.
27-Feb. 4—**Jersey City, N. J.** Hudson County Automobile Dealers' Show.
29-Feb. 1—**Batavia, N. Y.** Automobile Show
29-31—**Cleveland, O.** Ohio Association of Commercial Haulers' Convention.
29-Feb. 1—**New Haven, Conn.** Automobile show.
29-Feb. 1.—**Lawrence, Mass.** Automobile Show.
30-Feb. 1—**Bristol, Conn.** National Guard, Company L. Automobile Show.

FEBRUARY

1- 8—**Minneapolis-St. Paul.** Automobile show.
1- 8—**San Francisco.** Pacific Automobile show at Civic Auditorium.
2- 6—**Dayton, O.** Automobile Show.
3- 8—**Cumberland, Md.** Automobile show
3- 8—**Ottawa, Canada.** Motor show.
3- 8—**Scranton, Pa.** Automobile show.
3- 8—**Syracuse, N. Y.** Automobile Show.
3- 8—**Toledo, O.** Automobile show.
3- 8—**Wichita, Kan.** Automobile show.
4—**Minneapolis, Minn.** Motor Trades Association, annual meeting at Hotel Badesson.
4- 7—**Davenport, Ia.** Automobile Show.
4- 8—**Kewanee, Ill.** Automobile Show.
4- 8—**South Bend, Ind.** Automobile Show.
4- 9—**St. Louis, Mo.** Automobile Show.
5- 8—**Elgin, Ill.** Automobile Show.
5- 8—**East Liverpool, O.** Automobile Show.
5- 9—**Aurora Ill.** Automobile Show.
7- 9—**Centralia, Wash.** Automobile Show.
8-15—**Albany, N. Y.** Automobile show at State Armory.
8-15—**Akron, O.** Automobile Show.
8-15—**Los Angeles, Cal.** Automobile Salon.
8-15—**Kansas City, Mo.** Automobile show.
8-15—**Allentown, Pa.** Lehigh Auto Trade Association Automobile Show
8-15—**Jacksonville, Ill.** Automobile Show.
10-15—**Indianapolis.** Automobile show.
10-15—**Denver, Col.** Automobile snow.
10-15—Richmond, Va. Automobile Show.
10-16—**Sheboygan, Wis** Automobile Show.
11-15—**Spartanburg, S. C.** Automobile Show.
11-16—**Tacoma, Wash.** Automobile Show at Armory.
12-15—**Rock Island, Ill.** Automobile Show.
12-15—**Mankato, Minn.** Automobile Show.
12-16—**Peoria, Ill.** Automobile Show at Armory.
13-15—**Springfield, Ill.** Automobile Show.
13-15—**Ansonia, Conn.** Automobile Show
15-22—**Indianapolis.** Automobile Show.
15-22—**Providence, R. I.** Automobile show.
15-22—**Canton, O.** Automobile Show.
17-22—**Omaha, Neb.** Automobile Show.
17-22—**Duluth, Minn.** Automobile Show.
17-22—**Waterbury, Conn.** Automobile Show.

KING COUNTY SALES SET RECORD IN DEC.

Seattle, Wash., Jan. 23.—December new car sales in King county surpassed any December ever known, according to estimates made from the offices of the Seattle Automobile Dealers' Association, by E. G. Hoffman, executive secretary.

"Several dealers have reported a large business for December," he said, "way beyond their expectations. One dealer said that he had done nothing unusual to increase his business during the month, but that he had sold more new cars than during any previous December, and that sales during the week December 26 to December 31 made that week the largest in sales of any week in 1929. From records in our office December looks like the best month of the year, except June."

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Ledwinka Discusses Bodies For Front-Wheel Drive Cars Before S. A. E. Session Today

Joseph Ledwinka of the Edward G. Budd Manufacturing Company will present the following paper on "Bodies for Front-Wheel Drive Cars" at the front-wheel drive session today of the S. A. E. at the Book-Cadillac Hotel in Detroit.

THE advantages and disadvantages of body design on front-wheel drive are so obvious that very little can be said that is not already known. All designers of motor cars have been striving to get the over-all height down to a minimum which is limited on a rear-wheel drive, and this minimum height can be determined in a very few minutes after receiving the chassis drawing. As we all know, this height can be calculated from the height of the differential housing in case of a sedan where the rear seat is directly over the rear axle.

We have here to add simply height to top of differential housing, clearance for spring action, height of cushion, head room inside and roof thickness. The sum of these dimensions gives us the over-all height of the car. We can possibly reduce this height by a bowl pressed into the seat pan, say 1½ inches to 2 inches, which extends into the cushion at the center line. Generally the over-all height can be brought down to approximately 69 inches or 70 inches. Such minimum height would not have been possible twelve or fifteen years ago, when high hats were worn by ladies and gentlemen.

In front-wheel drives we can reduce this height considerably. There was a car in the Paris show which is only 54 inches over-all in height. The demonstration cars were all backed up against the sidewalk, and then only a contortionist could safely enter this mole-hill on wheels. Had these cars been placed alongside the curb, even the contortionist would have to give up.

These are extremes and will suit only a few, but in a car which is to be built in quantities suitable to the majority of people, it is necessary to strike a happy medium.

If the chassis is built for a 9-inch road clearance and is 7 inches deep, and if the floorboards are laid directly on the chassis frame, we have a height from ground to top of floor board of approximately 17 inches. Then if we make the seat height 12 inches, with 37-inch headroom, 1½ inches for roof, we have 67½ inches. If we make the roof thickness from centerline on top to door opening of the very thinnest, say 3½ inches, and take the height of curb at 8 inches, it is necessary for the passenger to stoop down to 56 inches to be able to enter. In these figures, the running board is left out; for, if it were on the car, it would be seldom used. However, a running board, even if it is now used, is advisable on account of mud spray from the wheels.

I personally consider this the minimum height a car should be to be comfortable of access, although it would be possible to reduce the height of 67½ inches to 65 inches.

It would be far better to take advantage of the low floor to give more headroom and keep the over-all height as at the present rear-wheel drives. This would be more acceptable as the trend at present is for more headroom. The before-mentioned dimensions referred to sedans; roadsters or coupes can be made lower as usual on rear-wheel drives.

The present tendency is for wider bodies, to seat three comfortably on the rear seat. Wheel treads have been increased to 59 inches in the United States; assuming 6-inch tires and a wheel-house clearance of say 3 inches, and assuming that the wheel housing is sheet steel, we have an inside width between wheel housings of 47 inches. Assuming the trim pads being directly against the housing, we have approximately another inch, giving us an inside width between trim pads of 46 inches, which would be just about enough to seat three. If the chassis is wide and flush on the outside of the wheel housing and has, say, a 2-inch flange, we can build an offset in the cushions and bring the rear seat pan somewhat below the top of the frame at the kick-up, as far as the clearance of differential housing will allow.

On front-wheel drive we can bring the pan down even with the bottom flange and can increase the height of springs and make a more comfortable cushion.

Besides the advantage of appearance from the designer's standpoint in the over-all height, we have the advantage of lowering the center of gravity which will add to the steadiness, reducing side sway, or, in general, it adds to the roadability of the car.

In addition to this advantage, the wind resistance plays a considerable part in the height of the car. Every inch less on top adds mileage. The density of the onrushing air is the greatest on top, therefore an inch gained on top will add the most to the efficiency of the car.

Front-wheel drives are necessarily of long wheel base and we have to economize in length of foot room in the body to help this disadvantage out as much as possible.

Chassis engineers will have to do some close figuring to reduce the length of the power unit; possibly the adoption of a V engine would help a great deal along this line.

Considering noises, we find the absence of humming noise from the rear axle; but there is a greater problem of muffling the noise at the front, and the chassis engineer must endeavor to eliminate vibration and gear noises.

Another advantage is the absence of gear-shift lever through the floor. If the emergency brake lever is placed against the side of the body, there are no obstructions, and it will be possible to seat three passengers in front comfortably if the body is kept wide enough at this point.

In general, I would say that on front-driven cars there is a great opportunity for the body designer to create harmony and beauty of lines, especially for custom jobs.

Front-Wheel Drive to Hold Spotlight of S. A. E. Today

(Continued from Page 1)

at French Lick Springs, Ind., with headquarters at the French Lick Springs Hotel. Members were also urged to attend the National Aeronautic Meeting of the society, which is being held at the Hotel Jefferson, St. Louis, Mo., February 18, 19 and 20 during the International Aircraft Exposition. This meeting will be held in conjunction with the Aeronautical Chamber of Commerce and includes an elaborate technical program.

At a non-technical dinner and session this evening at which Edward P. Warner, the 1930 president of the S. A. E., presided as toastmaster, there was an address by David Lawrence of the United States Daily, on "The Automobile in Perspective."

Following a similar non-technical session last night, which was addressed by Alfred Reeves, general manager of the National Automobile Chamber of Commerce, questions submitted to Mr. Reeves revealed a keen interest on the part of engineers in the business outlook of the industry.

Among the questions asked Mr. Reeves was one regarding the possible effects of the proposed French tariff on American automobiles, and what steps were being taken by the N. A. C. C. to prevent its adoption. Mr. Reeves declared the chamber at this time is doing all in its power to convince the French government that such a discriminatory tariff should not be adopted and to this end has called attention of the French government to the hardships such a tariff would place on the 800 automobile dealers in France who are now engaged in the sale of American cars.

A second question presented asked: "What is most vital to keep the motor car business going ahead in 1930?" In reply Mr. Reeves urged that there be no let-down in advertising and sales promotion work and recommended a better recognition of dealers and a closer co-operation with them.

Gordon England, chairman of the Gordon England Company, presented a paper at the body conference this afternoon covering the subject of "Body Mounting." Mr. England outlined the difficulties to be met in obtaining the greatest possible quiet in automobile bodies and also reviewed methods of body mounting that have been devised to attain that end.

One method he suggested was that of designing a one-piece, all-metal shell (preferably of aluminum), which is mounted to the chassis and at three points of attachment with very limited articulation. Hood and dash are kept free of the body cowl. The floor of the body is mounted and attached directly to the chassis and is also free from the body shell. Seats, instead of being built into the body shell, are attached directly to the floor. In this way, he declared, the body shell is actually floating unstressed on its three points of attachment, for three points constitute a plane and thus no flexibility of the chassis would have any stress effect upon the body shell.

Mr. England added that in this construction it was found that a body of quite extraordinary lightness could be built, and, having ample strength for all requirements, owing to a freedom from any stressing and consequent "working" of the body, there was no relative movement between the body components and, therefore, complete silence and a lasting silence; further, owing to the insulation of the body from the chassis, there appear to be that restfulness and peace of mind so desirable and yet so difficult to obtain.

1,000 MICHIGAN DEALERS VISIT DETROIT'S SHOW; PLACE LARGE ORDERS

Detroit, Mich., Jan. 23.—More than one thousands members of the Michigan Automotive Trade Association gathered in Detroit yesterday and during the afternoon visited the automobile show. It was reported that large numbers of orders for cars were placed by the visitors.

At a banquet in Hotel Statler last night Homer Guck, publisher of the Chicago Herald and Examiner, the principal speaker, told the dealers that New York bankers felt any depression that may have been coming had been avoided and that business prospects were excellent for the year due to the plans for use of money in industry that formerly was used for stock speculation.

Albert Parfet of Port Huron presided and introduced H. J. Allington of Saginaw, president for 1930.

MINIGER SEES BIG YEAR FOR ELECTRIC AUTO-LITE

Toledo, O., Jan. 23.—The current year will be the best in the history of Electric Auto-Lite, in the estimation of C. O. Miniger, president of the concern. Speaking to more than 100 of the company's representatives at a meeting held here this week, Miniger said 1930 would be the most profitable business year for his company.

Muller of New Era Gives Paper on Front-Wheel Drive Cars

(Continued from page 3)

ferential housing, so this doesn't count.

Gear shift is by remote control with the shift lever on the instrument panel. It makes a roomy front. The driver can get out the opposite door without leaving his feet behind, and three people can sit in the front seat comfortably.

It has been variously stated that one disadvantage of front drive lies in the fact that there is lost traction on steep grade. True and also slightly academic; a 15 per cent. grade throws the center of gravity back about four inches, which is some 3 per cent. of a 150-inch wheel base. A 3 per cent. loss of traction need not worry us much when the Bureau of Standards reports the grip of tires on different road conditions to vary from 25 to 100 per cent. of the load. We have pulled our Ruxtons up some pretty steep places and we didn't go up backwards either. In fact, on a very icy day after snow and rain which froze, we set out with two cars to experiment with this situation without chains, and we came upon some hills on which many rear-drive cars were having difficulty due to slippage. By keeping even traction we went right over without any slippage. We also tried some hills which could not be climbed without skid chains and found we could go just as far up as a well-known rear drive. By stopping on a certain part of the hill it was impossible to get another start; the fact that we tried reverse as well as forward made no difference. This same difficulty was experienced by the conventional rear-drive cars as well.

This brings up another point of academic interest, namely that of weight transfer due to acceleration. Few cars actually accelerate better than three feet per scond squared, so using the same C. G. and wheel base. The loss of weight on the front axle amounts to 69 pounds, or 3½ per cent. of static load. When four-wheel braking first occupied our thoughts, this question of load transfer was a real issue. In our case it becomes of minor importance.

Weight distribution, fully equipped but without passengers, is as follows: On front wheels, 2,125; on rear wheels, 1,875; unsprung weight, front 390; rear 280.

I am not going to discuss the influence of front-wheel drive on body construction, since this subject will be covered by Mr. Ledwinka in more detail than would be appropriate for this paper.

In closing, permit me to repeat that front-wheel drive has its advantages; and, as they become more widely recognized, we shall see a trend toward this form of construction. While the Ruxton is an expensive car, there is nothing inherently costly in the fact that the drive is on the front end. On the contrary, as we further study the problem, economics appear which even now make it apparent that a front-drive car can be built for even less money than an equivalent rear-drive job of today.

Paper on 'Elimination of Chassis Vibration,' Read To S. A. E. at Detroit Today

(Continued from page 3)

ber of out-of-balance gears mounted in a casting that was attached to the crank shaft, the gears rotated at the desired speed. By this means mountings could be placed under the engine and checked accurately in a short time, as it was only a matter of a simple laboratory set-up to determine the effectiveness of the mounting by balancing the potential divider so that the reading obtained on a microammeter measuring the flow of B-battery current in the radio amplifier was the same for each pick-up device. The potential divider, of course, was adjusted to make the flow of the B battery current the same for any two readings, and the ratio of the two resistances was the ratio of vibration in the engine to that in the frame.

The reading of the ratio of resistance were 3 to 1 with the engine mounted rigidly with metal-to-metal contact on the frame, and the mounting as finally developed reduced this ratio to the proportion of ½ to 1. An analysis of these readings shows that, with the particular chassis used, the vibration in the frame was three times that in the engine when the engine was mounted with a rigid metal-to-metal contact. Rubber in the mounting reduced the frame vibration to one-sixth of its former value, with that in the engine remaining constant.

The vibration pick-up units, when transferred to the front of the engine, one being mounted on the engine leg and one to the frame adjacent to the leg, showed no appreciable difference in effect between a very small and a large mass of rubber in the mounting. This verified our findings on the road.

Various Rubber Combinations Tried

With this set-up experiments were then conducted on the truncated cone type of rear mounting with various rubber combinations and degrees of hardness ranging from very soft to a fairly hard rubber. Based on the analysis of insulation of vibration by Mr. Knudsen, we attempted to develop a mounting having various hardnesses of rubber, each of which would absorb a certain range of vibration frequencies. This was the fundamental cause for trying laminated rubber and combination mountings, such as a type in which the center was of extremely soft rubber and the exterior of a harder composition. A number of mountings of this type were developed, some having as many as seven laminations of rubber, each ⅛ inch thick and of different hardness; also mountings of consistent hardness, varying from the softest to the hardest rubber permissible to use. The effect of tightening the hold-down bolt passing through the mounting was also worked out with each type of mounting, and we found that this bolt was most effective when it was first tightened with the fingers and subsequently with the wrench to approximately one turn of the nut.

Mountings with rubber of 32 durometer hardness, with rubber of 69 durometer hardness, with laminated rubber of alternate layers varying from 32 to 69 hardness, and a mounting having a core of 32 durometer hardness and a shell of 69 durometer hardness, were selected from the large number tried in the laboratory as the most promising for road trial.

These four types of mounting were then installed in a number of cars and observed for transmission of engine vibration to the chassis by various individuals and were graded by these individuals without their knowledge as to the type of mounting in the car. The soft rubber mounting of 32 hardness was found to allow too much engine movement, and the combination mountings made from varying hardnesses of rubber were found no more effective than the mounting made of 69 Durometer hardness of rubber because the periods of the frame that tuned to the engine vibrations were such that the 69 hardness of rubber absorbed the vibrations that were disagreeable to the occupants. Consequently, activities were confined to the truncated cone type of mounting with a rubber having a hardness of 69 Durometer and that, when compressed 50 per cent. and heated to 100 degrees Fahr., for twenty-four hours and the cooled, took a permanent set of only approximately 8 per cent. A washer-type front mounting of the same hardness as the rear mounting was then tried and proved to be very effective.

Eliminating the Weak Points

The sensitiveness of the tightness of the through bolt of the mounting was next attacked, and by reverting to the laboratory set-up we found that this sensitiveness could be greatly reduced by making the upper rubber collar used on top of the rear engine leg with a counter bore and of 32 Durometer hardness. This changed the sensitiveness of tightness of the bolt from one turn tight with a wrench to four turns, which was very desirable as regards production, and, as we thought at that time, from the standpoint of adjustment while in service. The latter, however, was a needless worry, because over a period of 25,000 miles of use the rubber mounting took only so much permanent set as could be measured by one-half turn of the through bolt.

The other questionable factor in the mounting, that of rubber deterioration, was proved over a period of two years, in which time we found that the rubber did not deteriorate sufficiently to cause any noticeable change in 50,000 miles of travel.

This type of mounting has now been in use for two years by the Olds Motor Works and is in its third year. However, in adapting it to a different type of engine in which the relation of the center of gravity to the point of mounting was changed in a vertical plane, we found it necessary to place the mounting at an angle of 30 degrees with the horizontal to maintain engine stability over rough roads. This change in the angle of the mounting, which is shown in Fig. 3, did not exert any appreciable effect on the vibration absorption powers of the device.

In every case, however, of trying a rubber mounting on an engine, redesigning the frame to afford sufficient frame stability was found necessary, because the engine did not provide the additional stiffness when mounted on rubber. After much development work on this subject, the conclusion was arrived at that the frame movement caused by rubber mountings was horizontal movement of the frame at the front end, and in each instance this has been successfully reduced to the minimum of adding lateral stiffness to the frame in the form of increased width of the horizontal flanges of the side rails.

In conclusion, we can state that the disagreeable engine noises which make themselves evident in a car by being transmitted to the frame can be successfully eliminated by mounting the engine on rubber in compression, provided the rubber is disposed so as to prevent disagreeable engine movement and that the hardness and volume of the rubber are such that it absorbs the vibrations the frequencies of which are in tune with the critical periods of the chassis.

KILBOURN SALES NAMED N. Y. C. DE SOTO DEALER

New York, Jan. 23.—Kilbourn Motor Sales, Inc., a new organization, temporarily located at 1757 Broadway, has been appointed De Soto dealer for the Greater New York and Long Island territories, according to an announcement today by the De Soto Motor Corporation.

O. P. Kilbourn

The new organization is headed by Orrin P. Kilbourn, who has been associated with the automobile industry for the past sixteen years.

At the conclusion of the World War, he became associated with John N. Willys Export Corporation of New York as advertising manager, later becoming assistant to the vice president in charge of sales.

A short time later Kilbourn was transferred to Toledo where he was put in charge of the sales promotion division of Willys-Overland. He soon was named to the post of assistant sales manager.

The parts and accessory departments of the new De Soto concern are at 125 West End Ave., at 65th Street.

PACKARD BRINGS OUT NEW SPEEDSTER LINE

Detroit, Jan. 23.—Packard has brought out a new line of special built cars known as the Packard speedsters. Five different body types are included, two runabouts, a phaeton, victoria and sedan.

The engines have special exhaust and intake manifolding, special cylinder blocks and special carburetors. In many other respects they are the same as the motors in the regular Packard Custom and De Luxe Eights. They develop 125 to 145 horsepower on the dynamometer, depending on the compression ratio.

One of the speedster runabouts has a perfectly stream lined body and a low, racy appearance. This car has staggered seats, the driver's seat being placed slightly forward of the passenger's seat, as in a racing car.

CUMULATIVE NEW PASSENGER CAR

Some of this data has been published previously, but it is

Returns for today: Louisiana

States	Auburn	Black Hawk	Buick	Cadillac	Chevrolet	Chrysler	Cord	DeSoto	Dodge	Durant	Elcar	Erskine	Essex	Ford	Franklin	Gardner	Graham	Hudson	Hupmobile	Jordan	La Salle	Lincoln
Arkansas			3		54	4		2	16	1			3	77								
Delaware	3		20	8	60	5		7	7	8			12	146				4	10		7	
Florida	7		111	9	581	55	2	18	53	3		1	76	1093	3		42	48	26	1	27	1
Illinois	23	3	246	50	542	157	15	65	467	35	8	3	189	1372	31	4	65	123	91	2	67	46
Louisiana	4		53	7	476	23		48	54	3			36	778	2	2	23	12	36		7	2
Maryland	4	1	91	16	383	66		32	93	23		1	113	776	2	1	43	35	51		11	1
Minn.		1	47	3	407	37		26	51	41		3	59	771	1		10	17	9		8	1
Missouri	5	2	131	11	598	33	1	26	365	45		4	106	1207	17	3	51	16	42		19	5
Montana			4		24	3		2	2	2			2	40			1		2			
N. Hamp.	1		9		19	5		3	12	5			11	59	3		2	5	1		1	
N. Jersey	5		67	14	136	46	2	17	107	7		2	43	260	5		8	14	26	1	22	5
N. Ca'lina			89	8	908	115	1	46	149	30		2	101	1684	8		28	43	12		9	4
N. Dakota			1		49	2		1	2	3			2	111			1	1	1			
Rh. Island	4		41	9	59	23	1	31	28	9	2	1	15	88	4		12	5	4		9	2
S. Dakota	2		14		202	8		6	30	11			15	339			7	6	16			
Utah	2	1	4		63	5		8	18	8			19	171	2		7	9	7			
Vermont	1		2		11	3		1	11				6	60			1	2				
W. Va.	4	2	50	4	343	40		32	107	15		3	110	578	4		49	20	26	2	3	3
Wisconsin	2	1	129	13	483	53	4	30	291	23		8	93	852	3		27	49	32	3	16	4
Dis. of Col.	8		32	5	125	28		9	42	8		1	35	319	3		29	18	13	1	6	7
Total...	75	11	1144	157	5523	711	26	410	1905	280	10	29	1046	10781	88	10	406	427	405	10	212	81

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising desiring county, city or town lists, or lists of owners in any given

G. M. EXPORT ANNOUNCES PERSONNEL MOVEMENTS AFTER N. Y. CONFERENCE

New York, Jan. 23.—O. K. Winding, who has been attending the general sales development conference of the General Motors Export Company here, sailed for Europe on January 18. Mr. Winding formerly was sales manager of General Motors Polsce at Warsaw, Poland, and has now been transferred to Adam Opel A. G. at Russelheim, Germany, on special assignment. He was accompanied by Mrs. Winding.

Leaving on the same ship to resume his post as manager of the sales promotion section of General Motors Peninsular, Madrid, were Rafael Mexia, and G. E. J. Demoulin, dealer development manager of General Motors (France), who have been in New York attending the sales development conference also.

C. T. Coleman, manager, bus and truck division of General Motors Export Company, will sail from Seattle, January 25, for a prolonged visit to General Motors Japan at Osaka. Before he returns to America Mr. Coleman will spend several weeks at General Motors G. m. b. H. at Berlin.

S. W. King, Cadillac-La Salle specialist attached to European regional headquarters in Paris, who has been on a short visit to the home office, sailed for France today to resume his duties.

John Sullivan, attached to the general manager's staff sails for Australia today. Mr. Sullivan will spend several months in Australia, later visiting General Motors plants in Java and Japan, and will return to America in about eight months. He will be accompanied by Mrs. Sullivan.

C. H. Perkins, assistant sales manager of General Motors Near East, Alexandria, who has been in New York attending the sales development conference of General Motors Export Company, will sail for France en route to Egypt tomorrow on S. S. Paris. He will be accompanied by Mrs. Perkins.

H. Sandreski, assistant sales manager of General Motors of Brazil; J. A. Donohoe, general service and parts manager, and Mrs. Donohoe, and J. Lutteral, assistant sales manager of General Motors Argentina, who have been attending the sales development conference here will return to their respective posts, sailing on the American Legion tomorrow.

125 MARMON DEALERS MEET IN HARTFORD

Hartford, Conn., Jan. 23.—T. E. Jarrard, general sales director of the Marmon Motor Car Company; C. E. Tenney, factory sales manager; J. M. Peterson, head of the financial division, and several other factory officials paid a flying visit to the Marmon and Roosevelt dealers at the Hotel Bond last evening. The Marmon party came here from Boston, and left late at night for Montreal to do the show there, and then will run over to the Chicago show.

One hundred and twenty-five Marmon and Roosevelt dealers were the guests of the state distributor, the Palace Motor Sales Corporation. Fred B. Griffin, president of the local company, was master of ceremonies.

A number of new dealers were added following the meeting.

EDSEL FORD HONORED

New York, Jan. 23.—Edsel Ford, president of the Ford Motor Company, Detroit, has joined the honorary international committee of the second annual aviation show, it was announced today by Rex F. Gilmartin, commander of Aviators' Post, No. 743, American Legion, which is sponsoring the exposition.

184 TOWNS IN 3 STATES TO BE SERVED BY ADAMS UNION TRUCK TERMINAL

Kansas City, Jan. 23.—Handling of freight by motor trucks in and out of Kansas City is going on a more organized basis with the announcement of the formation of the Adams Union Truck Terminal. The terminal is to be operated by the Adams Transfer and Storage Company.

As a start the terminal will serve 184 towns and cities in Missouri, Kansas and Oklahoma with daily motor truck service. Only responsible truck concerns will be permitted to use the terminal with the Adams organization assuming full responsibility for delivery.

Standardized forms of waybills and delivery tickets are to be used. The service is, the company states, an "express service at freight rates." A new terminal is now under construction at 5th and May Streets, which will handle sixty trucks at inclosed docks at one time. The Adams company has operated here thirty years.

MOTOR TRUCK EQUIPMENT GROUP VOTES TO DISBAND

Atlantic City, N. J., Jan. 23.—The annual road show meeting of Equipment for Motor Trucks, Inc., association of manufacturers and distributors of motor truck equipment, was held in the Colton Manor Hotel here recently, at which time it was voted that the association discontinue its activities.

WISCONSIN AXLES

Make the selling job easier, whether it's trucks or buses

In sturdiness, efficiency, and accessibility they answer all questions about axles.

WISCONSIN AXLE CO. Oshkosh, Wis.

Cumulative New Commercial Car Registration Table, December, 1929

Returns for today: Louisiana and North Carolina

Some of this data has been published previously, but it is given here complete for the convenience of our subscribers.

States	Autocar	Brockway-Indiana	Chevrolet	Diamond-T	Dodge	Dover	Fargo	Federal	Ford	G. M. C.	International	Mack	Pierce-Arrow	Relay	Reo	Republic	Rugby	Sterling	Stewart	Studebaker	Whippet	White	Willys-Knight	Miscellaneous	Totals	States
Arkansas			33		1				32		1				1						1				69	Arkansas
Delaware	2	2	17		3				37	6					2							2		1	72	Delaware
Florida		6	120		10				228	1	9	1			10					1	4	1			391	Florida
Illinois	4	5	150	33	29	1	4	2	281	26	59	11	1		12			4	3		10	5		48	688	Illinois
Louisiana			70		13				121	6	30	1			1						2	2	1		247	Louisiana
Maryland	6	12	80	7	33	2	4	1	171	8	24	4		1	14	2		6	3	3	3	14	2	12	412	Maryland
Minnesota		3	105		13		3	1	250	5	38	2			4		1			1	5	3		9	443	Minnesota
Missouri	1	3	155	3	39	1	4	1	268	14	23	2			9		1	3		2	9	9		4	551	Missouri
Montana			5		1				7		6										1				20	Mont.
New Hamp.			12		2				17		4	1			1							1			38	N. Hamp.
New Jersey		3	44		16		2	14	92	8	1	6			2			3			3	7		11	212	New Jer.
N. Carolina			157		28	1	3	1	224	15	30	2				2	1		1		3	4		4	476	Nor. Car.
N. Dakota			16						20	3	2										1				42	N. Dakota
Rh. Island	1		17	1	17		2		48	4	7	7			5		1		1	1	2				114	R. Island
S. Dakota			39		2				58	2	13	6			3						4			2	129	S. Dakota
Utah			7		8				27	1	2				1		1				1				48	Utah
Vermont			2	2	1				22	5					1							1			34	Vermont
W. Virginia		1	77		30	2		1	136	8	18			1	6	1	1		2	1	5	2		6	298	West Va.
Wisconsin			125	2	23	2	2	5	220	16	23	4			13		2	9	2	3	7	6	1	10	475	Wisconsin
Dist. of Col	1		14	4	6				57	9	3	1			2				4			11		3	115	D. of Col.
Totals	15	35	1245	52	275	9	24	26	2316	137	293	48	1	2	87	5	8	25	16	12	61	68	4	110	4874	Totals

Figures in this table are from R. L. Polk & Co. of Detroit, with the exception of Illinois, which are supplied by the Robinson Advertising Service Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Readers desiring county, city or town lists, or lists of owners in any given section, may obtain these by addressing any of these three companies.

Commercial Car Registrations do not include buses.

REGISTRATION TABLE, DECEMBER, 1929

given here complete for the convenience of our subscribers.

and North Carolina

States	Locomobile	Marmon	Marquette	Nash	Oakland	Oldsmobile	Packard	Peerless	Pierce-Arrow	Plymouth	Pontiac	Reo	Roosevelt	Stearns Knight	Studebaker	Stutz	Viking	Whippet	Willys-Knight	Windsor	Miscellaneous	Totals
Arkansas				2		2				5	2		1					5				177
Delaware			2	9	3	5	6	1	2	7	19				3		1	7	2			364
Florida		4	19	37	8	29	42		10	25	54	12	8		17		2	36	9			2,469
Illinois		8	16	110	41	121	111	15	16	67	102	21	20	2	83	10	8	71	14	12	48	4.500
Louisiana		1	3	70	6	24	8	4	7	30	74	1	5		26			24	8			1,857
Maryland		9	23	71	21	39	34	7	6	56	112	22	6		37		2	55	8		1	2.252
Minn.			2	17	17	27	14		1	50	67	1	1		33	1		36	4		2	1,765
Missouri		17	11	51	25	53	41	11	13	56	71	8	9		64		2	98	15	7	1	3,240
Montana			1	4	1	1	1			7	2	1	2		1			3	1		1	108
N. Hamp.		2	1	10		6	2			8	8	5	1		4			4	1			188
N. Jersey		3	2	57	11	35	24	2	13	12	39	4	3		27	2	2	21	9	3	3	1,059
N. Ca'lina		3	19	39	18	28	12	1	3	67	86	6	9		22			47	8			3.605
N. Dakota			2	3	5	2				4	16		1		1			11	1			220
Rh. Island			3	17	8	13	6	5	5	10	16	9	1		9		1	10	9		1	470
S. Dakota		1	3	10	8	21				23	14	2	3		10		2	28	2			783
Utah				15	1	8	2			2	16	4			12			1	1			386
Vermont			1	3		1				2	7		1		2			3				118
W. Va.		6	5	47	14	35	15	1		50	46	15	17	1	15	1		44	15		1	1,722
Wisconsin		2	14	114	31	55	24	3	9	43	80	9	2		46	1		45	12		5	2,611
Dis. of Col.		3	6	23	18	24	14	26	6	9	23	4	1		22			8	4		2	882
Total...		59	133	709	236	529	356	76	91	533	854	124	91	3	434	15	20	557	123	22	65	28.777

Service, Springfield, Ill., and New Jersey, which are furnished by the New Jersey Motor List Co., New Car Division, Trenton, N. J. Readers section, may obtain these by addressing any of these three companies.

DEALER DOINGS

Tacoma, Wash., Jan. , 23.—The Mueller-Harkins Motor Company of Tacoma, Pierce county Buick distributor, has appointed the Eatonville Lumber Company Buick-Marquette dealer in Eatonville. John Galbraith will be in charge.

East Orange, N. J., Jan. 23. — A piece of property more than 25,000 feet in area at Central and Freeman Avenues here has been purchased by Charles Motors, Inc., of Newark, which will erect a two-story garage and showroom for Stutz and Blackhawk automobiles.

Decatur, Ill., Jan. 23.—P. B. Talbott and C. C. Bilgere, formerly in the Talbott-Berry Company, have organized the Talbott-Bilgere Motor Company, Inc., which will have the exclusive Ford-Lincoln franchise in this city.

Boston, Mass., Jan. 23.—Announcement is made of the appointment of the Becker-Stutz Company, 860 Commonwealth Ave., dealer for the Cord Front Drive car.

Birmingham, Ala., Jan. 23 (UTPS). —J. H. Holcomb, Jr., has disposed of his interest in the Scouten-Holcomb Motor, and in the future the distributor of Erskine, Studebaker and Pierce-Arrow cars in Birmingham will be known as the Scouten Motor Company. Mr. Holcomb is resigning to devote his time to other business matters which demand his attention.

Newark, N. J., Jan. 23.—E. J. Foley, president of the Foley Chevrolet Company, entertained several officials of the Chevrolet Motor Company at a dinner in the Newark Athletic Club. Included in the party were P. R. Letts, zone sales manager, and H. L. Horton, general sales manager.

Milwaukee, Wis., Jan. 23.—John W. Kent, veteran Milwaukee automobile dealer, has taken a dealer franchise for Hudson-Essex cars, while continuing as distributor for Stutz cars.

Jacksonville, Fla., Jan. 23.—E. H. Bacon, prominently identified with the automobile business in Jacksonville for the last sixteen years, has just been awarded the franchise for the Marmon line of cars in this territory. Mr. Bacon will operate as the Bacon-Marmon Company, and has secured sales and service quarters at 477 Riverside Ave. His territory will take in thirty-two counties in Florida and twenty counties in south Georgia.

Toledo, Ia., Jan. 23.—Ben Morgan, proprietor of the Morgan Auto Company, will move his garage to Tama this week, having leased the building on the Lincoln and No. 59, with more than 11,000 square feet floor space, which will be the largest garage in Tama county. New shop equipment has been purchased. Mr. Morgan had previously operated garages in both Tama and Toledo.

TEXAS BANKER WARNS AGAINST OVERLOADING

San Antonio, Tex., Jan. 23.—Criticism of overloading dealers was expressed by Walter Napier, president of the Alamo National Bank of San Antonio, in addressing a San Antonio Auto Trades Association luncheon.

While he stated his belief that bankers generally are inclined to extend all reasonable aid to dealers conducting business along safe and conservative lines, Mr. Napier intimated that those who buy too heavily in order to please manufacturers with the expectation of obtaining bank loans approximating closely the value of stocks carried, might expect bankers to become more conservative.

Mr. Napier said he believes the time has arrived for dealer associations to adopt an ironclad code of conservative buying and compel members to abide by it. "Dealers who operate along safe lines will find bankers endeavoring to see them through," he stated.

Personal Briefs

Memphis, Tenn., Jan. 23.—J. J. Davis is the new sales manager in charge of the Memphis zone of the Willys-Overland, Inc. He formerly held the same position at New Orleans, and has been with the organization several years. He will also have charge of the Nashville, Little Rock, Ark.; Jackson, Miss., and Mobile, Ala., offices, but will maintain headquarters here.

Tacoma, Wash., Jan. 23.—M. G. Tennent, president and general manager of the Tennent Steel Corporation, has been re-elected president of the Tacoma Community Chest and Federation of Social Agencies. It is his third consecutive term. The steel manufacturer is the only man to be so honored in the eight years that the organization has existed. Leo W. Harkins, vice-president and treasurer of the Mueller-Harkins Motor Company, Pierce county Buick distributor, was chosen second vice-president. Tennent, Harkins and J. Frank Hickey, southwest Washington White truck distributor, were elected to the board of trustees.

Hartford, Conn., Jan. 23.—Arthur A. Nielsen of the John P. Nielsen & Sons Company, Chrysler distributor, has for the third year in succession made the factory sales honor roll. In a recent local sales contest he topped the list, but, being a member of the firm, did not take the honor.

Philadelphia, Pa., Jan. 23.—The Washbourn Motor Company of Philadelphia, distributor of the Gardner motor cars, has announced the appointment of Harry C. Mumma as manager of its wholesale and retail departments. Mr. Mumma was formerly connected with the Willys-Overland Company of Philadelphia.

In the Bus Field

Newark, N. J., Jan. 23.—A new garage at 873-875 Summer Ave., this city, has been opened by the Public Service Co-ordinated Transport. The following lines have been transferred from the Lake Street Garage to this new location: North Newark, Summer Avenue and Nutley. The Caldwell-New York and Orange Crosstown bus lines were transferred from the O. P. & V. Garage to Lake Street Garage, and the Upper Montclair bus line from Great Notch Garage to Lake Street Garage, all in Essex Division.

Rockford, Ill., Jan. 23.—Buses operated by the transportation division of the Rockford Electric Company carried 4,143,540 of the 11,860,174 passengers on the electric and bus lines operated by the company during 1929. Buses traveled 1,020,853 miles against the electric lines' travel total of 1,359,766 miles. January was record month for both units with 399,878 passengers on the buses.

Trenton, N. J., Jan. 23.—Public Service Co-ordinated Transport has been allowed by the state board of public utility commissioners to purchase twenty-one buses owned by the Grove Street Crosstown Bus Line, Inc., and operate them between Irvington and Bloomfield. The company was also given permission to place nine more buses in operation on the line and extend the Bloomfield terminal to the D., L. & W. Railroad station in that city.

Nashville Tenn., Jan. 23.—The state Railroad and Public Utilities Commission has issued a certificate of convenience and necessity to the Atlantic-Pacific Stages, Inc., authorizing the interstate operation of a bus passenger line from Nashville to Birmingham, Ala., by way of Pulaski and Columbia in Tennessee. One round trip daily was authorized.

Tuckerton, N. J., Jan. 23.—Walter Atkinson, owner of the Atkinson Garage here, announces that on January 25 he will take over the management of the Beach Haven bus lines operating between Beach Haven and Philadelphia. This service was formerly at 13th and Arch Streets, but under the new management the line will operate from Nevin's bus terminal at 12th and Locust Streets. Atkinson is owner of the bus lines now running from Barnegat to Atlantic City and from Tuckerton to Atlantic City.

HARTFORD'S CAR SHOW IS BIGGER THAN EVER

Hartford, Conn., Jan. 23.—The Hartford automobile show is going over big, according to the show committee of the Hartford Automobile Dealers' Association. An innovation this year is the setting aside of Saturday, the last day of the exhibition, as used car day, something that has never been done during the past twenty-three years that the association has conducted the shows here. All new cars will be removed from the building tomorrow evening at the close of the show and used cars substituted.

TIRE RENEWAL PEAK SEEN IN '30 BY GOODYEAR

Akron, O., Jan. 23.—"The year 1930 will be the greatest in the history of the tire business for the sale of tires for renewal purposes, and this market will be engaged in by the smallest number of competitive companies in fifteen years."

In these words the Goodyear News, dealer publication of the Goodyear Tire and Rubber Company, in its January edition sums up its survey of the past year and the outlook for the current period.

"Renewal of tire business," the publication states, "is based on some 25,000,000 motor vehicles which will be running off the miles in 1930 just as few less millions did in 1929 and 1928."

Paul W. Litchfield, president of the Goodyear company, in an accompanying statement, declared that the wage scales now prevailing in the rubber industry will not be reduced during 1930. He also stated that employment will be greater and steadier during the year.

CLEARED HIGHWAYS FOR WINTER DRIVING BRING EARLIER BOSTON SHOW

Boston, Mass., Jan. 23.—"Many people have asked me why this year we are holding the Boston Automobile Show in January instead of in March as has been the custom for many years," says Manager Chester I. Campbell. "The answer is simple. Changed conditions, which have made the motor vehicle a year-round necessity in New England, as everywhere else, and the greatly improved road conditions throughout the winter have made the first of the year the logical time to hold the exhibition as manufacturers are bringing out new models.

"Years ago the Boston show became a March fixture because there was little motoring done in New England during the winter. Today the situation is different. This winter Massachusetts is clearing practically every mile of its state highway system, some 1,600 miles, and a large part of the secondary highway system. Remarkable good work is being done to keep the roads clear in Maine, New Hampshire and Vermont, where the snow problem is greater, so that one can go almost anywhere in those states by automobile.

"The earlier date of the Boston show is also expected to steady the sales of dealers and to insure earlier deliveries to purchasers."

CRONE FIRM NEW GARDNER DISTRIBUTOR IN LOUISVILLE

Louisville, Ky., Jan. 23.—Appointment of the Crone Automotive Service, Inc., 121-123 South 26th St., as distributor for Gardner cars in Louisville and the surrounding area, is announced by the Gardner Motor Company, Inc., of St. Louis. The officers of the Crone firm are: president, E. E. Crone; vice-president, A. E. Crone; secretary-treasurer, A. S. Crone.

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MAJOR SPECIFICATIONS AND MECHANICAL DETAILS OF

Make and Model	Capacity—tons	Chassis price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gearset	Location	No. Spds. for.	Rear Axle	Final Drive	Reduction in Low	Brakes, foot	Brakes, hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	
Am. La France Chief	2	3650	Own	6	3¾x5	33.0	Pw	Str	Vac	Rem	Own	C	4	Tim	Wo	31.2	4	D	156	6200	32x6	32x6 D
Am. La France W	3-4	3950	Own 2 R	4	4¼x6	28.9	P&S	Zen	Vac	A B	Own	C	4	Own	D R	47.4	D	R	160	7200	S 36x5	S 36x5 D
Am. La France S	4-4½	5200	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	Wo	54.4	D	R	165	8900	S 36x6	S 36x6 D
Am. La France V	5	5500	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	Wo	54.4	D	R	165	9800	S 36x5	S 40x6 D
Am. La France Z	6½	5750	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	Wo	63.5	D	R	165	10000	S 36x7	S 40x7 D
Am. La France U	7½	6000	Own 5 R	4	4¾x6	36.2	P&S	Zen	Vac	A B	Own	C	4	Own	—	63.5	D	R	165	10500	S 36x7	S 40x8 D
Am. La Fran. Big Chief	6		Own	6	4½x6	48.6	Pw	Zen	Vac	Rem	Own	C	4	Own	D R	32.8	W	D	226	10600	S 40x8	40x8 D
Autocar S A	1½	2700	Her	6	3¾x4½	33.8	Pb	Zen	Vac	L-N	Br-L 35	U	4	Own S A	Sp	27.9	4	R	150	4400	32x6	32x6
Autocar S D	2	3000	Her	6	3¾x4½	33.8	Pb	Zen	Vac	L-N	Br-L 35	U	4	Own S D	D R	33.9	4	R	150	4850	32x6	32x6 D
†Autocar H	3	3750	Own	4	4½x5½	32.4	C S	Str	Gra	A B	Own T	U	4	Own H	D R	48.9	R	R	114	5800	34x5 S	36x10 S
†Autocar S H	3	4000	Her	6	4⅛x4¾	40.8	Pb	Str	Gra	R B	Own T	U	4	Own H	D R	48.9	R	R	114	5800	34x5 S	36x10 S
Autocar T	3	5000	Her	6	4⅜x4¾	45.9	Pb	Str	Vac	R B	Own T	U	4	Own T	D R	72.5	R	R	187	7100	36x8	36x8 D
†Autocar H S	3½	4100	Own	4	4½x5½	32.4	C S	Str	Gra	A B	Own T	U	4	Own J	D R	55.2	R	R	114	6900	34x6 S	36x12 S
†Autocar S H S	3½	4400	Her	6	4⅜x4¾	45.9	Pb	Str	Gra	R B	Own T	U	4	Own J	D R	55.2	R	R	114	7000	34x6 S	36x12 S
Autocar T S	3½	5350	Her	6	4⅜x4¾	45.9	Pb	Str	Vac	R B	Own T	U	4	Own Chs	D R	81.7	R	R	187	7100	36x8	36x8 D
Autocar S C M	5	5000	Her	6	4½x4¾	48.6	Pb	Str	Vac	R B	Own B	C	4	Own M	D R	72.1	R	R	162	8600	34x7 S	36x14 S
Brockway 65	1	1195	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Aut	Br-L 20	U	4	Col 36020	Sp	21.3	4	Tr	137	3400	30x5	30x5
Brockway 75	1¼	1290	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Aut	Br-L 20	U	4	Col 36020	Sp	25.6	4	Tr	137	3450	32x6	32x6
Brockway 90	1½	1525	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 55001	Sp	25.6	4	Tr	149	3850	32x6	32x6
Brockway Junior	1	1195	Wis C	4	3¾x5	22.5	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 36020	Sp	21.27	4	Tr	130	3100	30x5	30x5
Brockway J F	1	1195	Wis F	6	3¼x4¼	25.4	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 36020	Sp	21.3	4	Tr	137	3450	30x5	30x5
Brockway C J B F	1½	1475	Wis F	6	3¼x4¼	25.4	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 55001	Sp	21.3	4	Tr	149	3650	32x6	32x6
Brockway E	1½	1765	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	L-N	Br-L 30	U	3	Col 55001	Sp	21.0	4	Tr	139½	3650	32x6	32x6
Brockway S	2	2450	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	L-N	Br-L 35	U	4	Wis 4610	D R	38.79	R	Tr	150¼	5100	S 34x4	S 34x8
Brockway S Y	2	2950	Wis Y	6	3⅜x5	27.3	Pb	Zen	Vac	L-N	Br-L 35	U	4	Wis 4610	D R	35.3	4	Tr	151¾	4950	32x6	34x7
*Brockway K	3	3420	Con K	4	4⅛x5¼	27.2	Pw	Zen	Vac	Eis	Br-L 35	C	4	Tim 65700	Wo	41.5	R	D	154⅛	5855	S 36x5	S 36x10
Brockway K R	3	3625	Con L	4	4½x5½	32.4	Pw	Zen	Vac	Eis	Br-L 55	C	4	Tim 65700	Wo	36.38	R	D	160⅝	6290	S 36x5	S 36x10
Brockway K W	3	3950	Wis H	6	4 x5	38.2	Pb	Zen	Vac	L-N	Br-L 51	U	4	Wis 1228	D R	33.7	R	D	170	6920	34x7	D 34x7
*Brockway R	4	4200	Con L	4	4½x5½	32.4	Pw	Zen	Vac	Eis	Br-L 55	C	4	Tim 66600	Wo	46.8	R	R	164	7890	S 36x5	S 36x12
Brockway T	5-7	5200	Con B 7	4	5 x6	40.0	Pw	Zen	Vac	Eis	Br-L 60	C	4	Tim 68700	Wo	53.5	R	D	175	10065	S 36x6	S 40x14
Chevrolet	½	365	Own	6	3⅛x3¾	26.3	C S	Car	P	Rem	Own	U	3	Own	Sp	12.68	4	R	107	1815	4.50x20	4.50x20
Chevrolet	1½	520	Own	6	3⅛x3¾	26.3	C S	Car	P	Rem	Own	U	4	Own	Sp	6.165	4	R	131	2375	30x5	30x5
Commerce 20 Y	1	1600	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	B 30x5	B 30x5
Commerce S 11 Y	1½	1900	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	B 30x5	D B 30x5
Commerce 30 Z	1½	2900	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	B 34x5	D B 34x5
Commerce 40 Z	2	3240	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	B 36x6	D B 36x6
Commerce 50 Z	2½	4415	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	D	175	7000	S 36x5	S 36x10
Commerce 60 Z	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	D	175	7100	S 36x5	S 36x12
Commerce 70 Z	3½	5250	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	D	175	8200	S 36x6	S 36x12
Commerce 80 Z	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	D	175	8400	S 36x6	S 36x14
Day Elder M F	1¼	1345	Con 16-C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Rem	Br-L 20A	U	3	Tim 52000 H	Sp	24.2	4	D	131	3500	30x5	30x5
Day Elder G F	1½	2100	Con 16-C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Rem	Br-L 20A	U	3	Tim 54000 H	Sp	28.3	4	D	156	4400	30x5	30x5 D
Day Elder H F	2	2550	Con 16-C	6	3⅜x4⅝	27.3	Pb	Zen	Vac	Rem	Br-L 35	U	4	Tim 63702 H	Wo	40.7	4	D	156	4900	S 34x4	S 34x7
Day Elder J F	3	3900	Con 18 R	6	4 x4½	38.4	Pb	Zen	Vac	Rem	Br-L 51	U	4	Tim 65001 H	Wo	41.5	4	D	156	6900	34x7	34x7 D
Day Elder K F	4-5	5000	Con 21 R	6	4⅜x4¾	45.9	Pb	Zen	Vac	Rem	Br-L 60	C	4	Tim 66702 DH	Wo	55.2	4	D	162	9500	S 36x5	S 36x12
Diamond T 151	1	1095	Con 18 E	6	3⅜x4	27.3	Po	Zen	Gra	Aut	Cov	U	3	Col	Sp	—	4	D	132	3200	30x5	30x5
Diamond T 290	1½	1475	Her W X A	6	3½x4½	29.4	Pb	Zen	Vac	Aut	Cov	U	4	Col	Sp	—	4	D	156¼	4160	30x5	30x5 D
Diamond T 302	2	1650	Her W X B	6	3⅝x4½	33.8	Pb	Zen	Vac	Aut	Cov	U	4	Clark	Sp	—	4	D	157¾	4600	32x6	32x6 D
Diamond T 502	2½	2675	Her W X C	6	4 x4½	38.4	Pb	Zen	Vac	Aut	Cov	U	4	Tim	Wo	—	4	D	163	5850	34x7	34x7 D
Diamond T 505	2½	2875	Her W X C	6	4 x4½	38.4	Pb	Zen	Vac	Aut	Cov	U	4	Wis	D R	—	4	D	171½	5850	34x7	34x7 D
Diamond T 550	2½	2195	Her W X C	6	4 x4½	38.4	Pb	Zen	Vac	Aut	Cov	U	4	Clark	Sp	—	4	D	165	5400	32x6	32x6 D
Diamond T 602	3	3510	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Cov	A	4	Tim	Wo	—	4	D	163½	7450	36x8	36x8 D
Diamond T 605	3	3810	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Cov	U	4	Wis	Dr	—	4	D	161½	7400	36x8	36x8 D
Diamond T 700	3½	4850	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Cov	A	4	Tim	Wo	—	R	D	162	8100	S 36x5	S 36x10
Diamond T 800	4	5325	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	Gra	Aut	Br-L	A	7	Own	Wo	—	4	D	195⅜	8300	36x8	4WH 36x8
Diamond T 1000	5	5500	Her Y X C 2	6	4½x4¾	48.6	Pb	Zen	Gra	Aut	Br-L	A	4	Tim	Wo	—	R	D	170½	10000	S 36x6	S 40x12
Diamond T 1600	8	7830	Her Y X C 3	6	4⅝x4¾	51.3	Pb	Zen	Vac	Aut	Br-L	A	7	Tim	Wo	—	R	D	190	11700	36x8	4W 36x8 D
Diamond T 2500	10-12	9750	Wak 6 R B	6	5 x5¾	60.0	Pb	Zen	Gra	Aut	Br-L	A	7	Tim	Wo	—	R	D	194	13100	S 36x7	S4W 36x12
Dodge Bros.	½	665	Own	4	3⅝x4¼	21.03	Pb	Stw	Vac	N E	Own	U	3	Own	Sp	15.2	4	D	110	1965	29x5.00 B	29x5.00 B
Dodge Bros.	¾	775	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	Own	U	3	Own	Sp	17.4	4	D	120	2510	31x5.25 B	31x5.25 B
Dodge Bros.	1	995	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	W-G	U	4	Own	Sp	23.8	4	D	130	2920	30x5	30x5
Dodge Bros.	1	1065	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	W-G	U	4	Own	Sp	23.8	4	D	140	2955	30x5	30x5
Dodge Bros.	1½	1345	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	Own	U	4	Own	Sp	36.8	4	D	150	3695	32x6	32x6
Dodge Bros.	1½	1415	Own	6	3⅜x3⅞	27.3	Pb	Stw	Vac	N E	Own	U	4	Own	Sp	36.8	4	D	165	3810	32x6	32x6
Dodge Bros.	2	1445	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	41.4	4	D	114	3725	32x6	34x7
Dodge Bros.	2	1545	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	41.4	4	D	150	3930	32x6	34x7
Dodge Bros.	2	1615	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	41.4	4	D	165	4070	32x6	34x7
Dodge Bros.	3	1745	Own	6	3⅜x4½	27.3	Pb	Zen	Vac	N E	Own	U	4	Own	Sp	46.3	4	D	135	4225	32x6	32x6 D
Dover	¾	595	Own	6	2¾x4½	18.27	P&S	Mar	Vac	Aut	Own	U	3	Own	Sp	—	4	4	110	2150	30x5	31x5.50
Durant Com. Chassis	½	495	Con	4	3⅜x4¼	18.2	Pb	Til	Vac	Aut	Own	C	3	Own	Sp	16.16	4	4	107	1670	28x4.75	28x4.75
Fargo Packet	½	545	Own	6	3 x4⅛	21.6	Pb	Str	Vac	N E	Own	U	3	Own	Sp	14.29	4	Tr	—	1835	5.00x19	5.00x19
Fargo Clipper	¾	725	Own	6	3⅛x4¼	23.4	Pb	Str	Vac	Rem	Own	U	3	Own	Sp	15.53	4	Tr	—	2325	5.50x18	5.50x18
Fargo Freighter	1	795	Own	6	3 x4⅛	21.6	Pb	Str	Vac	N E	Own	U	4	Own	Sp	37.19	4	Tr	133	2785	6.00x20	32x6
Ford A A	1½	520	Own	4	3⅞x4¼	24.0	P&S	Zen	Gra	Own	Own	U	3	Own	Wo	*16.1	4	4	131½	2282	6.00x20	32x6
F. W. D.—H	2	3300	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	Eis	Cotta	C	4	Own	St	38.1	4	R	121	5300	34x7	34x7
F. W. D.—H 6	2	3425	Wak	6	3½x4½	29.4	Pb	Zen	Vac	Eis	Br-L	U	4	Own	St	35.0	4	R	133	5500	34x7	34x7
F. W. D.—B	3	4200	Own	4	4¾x5½	36.1	Pb	Str	Gra	Eis	Own	C	3	Own	St	35.6	4	R	124	6460	36x6 S	36x6 S
F. W. D.—B 5	3	4525	Own	4	4¾x5½	36.1	Pb	Str	Gra	Eis	Own	C	5	Own	St	88.6	4	R	132	6800	36x6 S	36x6 S
F. W. D.—U 6	3½	4575	Wak	6	4 x4¾	38.6	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7200	36x6 S	36x6 S
F. W. D.—BTL 4	2	3900	Wis S U	4	4 x5	25.6	Pb	Zen	Vac	Eis	Br-L	C	7	Own	St	84.7	4	R	120	6000	36x8	36x8
F. W. D.—B T	3	4742	Own	4	4¾x5½	36.1	Pb	Str	Vac	Eis	Own	C	5	Own	St	101.0	4	R	133¾	7700	40x7 S	40x5 S D
F. W. D.—U 4	3	4575	Own	4	4¾x5½	36.1	Pb	Str	Vac	Eis	Own	C	5	Own	St	88.6	4	R	148	7000	36x6 S	36x6 S
F. W. D.—X 6	6	6500	Wak	6	4¼x4¾	43.3	Pb	Zen	Vac	Eis	Own	C	5	Own	St	88.6	4	4	170	9500	36x8	36x8
Garford 20 Y	1	1600	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	B 30x5	B 30x5
Garford S 11 Y	1½	1900	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	B 30x5	D B 30x5
Garford 30 Z	1½	2990	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4700	B 34x5	D B 34x5
Garford 40 Z	2	3240	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	B 36x6	D B 36x6
Garford 50 Z	2½	4419	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	D	175	7000	S 36x5	S 36x10
Garford 60 Z	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	D	175	7100	S 36x5	S 36x12
Garford 70 Z	3½	5250	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	D	175	8200	S 36x6	S 36x12
Garford 80 Z	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	D	175	8400	S 36x6	S 36x14
Gen. Mot. T 11-1001	*3800	625	Pontiac	6	3⅛x3⅞	26.3	Pb	Mar	P	Rem	Pontiac	U	3	Pontiac	Sp	14.67	4	D	109⅜	1980	5.00x19 B	5.50x19 B
Gen. Mot. T 19-2001	*8000	1015	Pontiac	6	3⅛x3⅞	26.3	Pb	Mar	P	Rem	Mun	U	4	Tim 5261-N	Sp	34.11	4	D	127¾	3075	32x6	34x7
Gen. Mot. T 19-2002	*8000	975	Pontiac	6	3⅛x3⅞	26.3	Pb	Mar	P	Rem	Mun	U	4	Tim 5261-N	Sp	34.11	4	D	127¾	3000	30x5	30x5 D
Gen. Mot. T 19-2003	*6000	895	Pontiac	6	3⅛x3⅞	26.3	Pb	Mar	P	Rem	Mun	U	4	Tim 5261-N	Sp	34.11	4	D	127¾	2925	5.50x20 B	32x6
Gen. Mot. T 25-2501	*8000	1285	Buick	6	3⅛x4⅜	26.3	Pb	Mar	P	Rem	Mun	U	4	Tim 5261-N	Sp	34.11	4	D	127¾	3575	32x6	34x7
Gen. Mot. T 30-3001	*10000	1530	Buick	6	3⅛x4⅝	26.3	Pb	Mar	P	Rem	Mun	U	4	Eat 1616	Sp	28.6	4	D	136	4200	32x6	36x8
Gen. Mot. T 30-3002	*10000	1505	Buick	6	3⅛x4⅝	26.3	Pb	Mar	P	Rem	Mun	U	4	Eat 1616	Sp	28.6	4	D	136	4125	32x6	32x6 D
Gen. Mot. T 30-3003	*8000	1395	Buick	6	3⅛x4⅝	26.3	Pb	Mar	P	Rem	Mun	U	4	Eat 1616	Sp	28.6	4	D	136	4075	6.00x20 B	34x7
Gen. Mot. T 42-4001	*12000	1885	Buick	6	3⅛x4⅝	26.3	Pb	Mar	P	Rem	Mun	U	4	Own	Sp	33.38	4	D	136	4690	32x6	36x8
Gen. Mot. T 42-4002	*12000	1790	Buick	6	3⅛x4⅝	26.3	Pb	Mar	P	Rem	Mun	U	4	Own	Sp	33.38	4	D	136	4640	32x6	32x6 D
Gen. Mot. T 42-4003	*10000	1685	Buick	6	3⅛x4⅝	26.3	Pb	Mar	P	Rem	Mun	U	4	Own	Sp	33.38	4	D	136	4510	7.00x20 B	36x8
Gen. Mot. T 60-5001	*16000	3215	Buick	6	3⅝x5	31.5	Pb	Mar	P	Rem	Mun	U	4	Tim 65706-N	Wo	44.81	4	D	140	6090	38x7	44x10
Gen. Mot. T 60-5002	*18000	3160	Buick	6	3⅝x5	31.5	Pb	Mar	P	Rem	Mun	U	4	Tim 65706-N	Wo	44.81	4	D	140	6425	36x8	36x8 D
Gen. Mot. T 60-5003	*14500	2800	Buick	6	3⅝x5	31.5	Pb	Mar	P	Rem	Mun	U	4	Tim 65706-N	Wo	44.81	4	D	140	6090	36x6	36x6 D
Gen. Mot. T 60 S-6101	*22000	3960	Buick	6	3⅝x5	31.5	Pb	Mar	P	Rem	Mun	U	4	Tim 66704-N	Wo	63.84	4	D	140¾	6920	38x7	38x9 D
Gen. Mot. T 60 S-6102	*19000	3695	Buick	6	3⅝x5	31.5	Pb	Mar	P	Rem	Mun	U	4	Tim 66704-N	Wo	63.84	4	D	140¾	6890	36x8	36x8 D
Gen. Mot K 102-6001	*28000	4250	Own 89	4	4½x6½	32.4	Pw	Zen	Vac	Eis	Mun	C	7	Tim 67600	Wo	86.3	R	R	160	9520	36x6 S	40x14 S
Gen. Mot. K 102-6002	*28000	4350	Own 89	4	4½x6½	32.4	Pw	Zen	Vac	Eis	Mun	C	7	Tim 67600	Wo	86.3	R	R	184	9600	36x6 S	40x14 S
Gotfredson RB-26	1¼	1295	Cont	6	3¾x4	27.3	Pb	Joh	P	Rem	Br-L	U	4	Tim	Sp	—	4	D	Opt.	3400	30x5	30x5
Gotfredson RB-36	1½	1595	Cont	6	3¾x4	27.3	Pb	Joh	P	Rem	Br-L	U	4	Tim	Sp	—	4	D	Opt.	3900	32x6	32x6
Gotfredson RB-46	2	2100	Her	6	3¾x4½	33.8	Pb	Joh	P	Rem	Br-L	U	4	Tim	Sp	—	4	D	Opt.	5140	32x6	34x7
Gotfredson RW-46	2½	2585	Her	6	3¾x4½	33.8	Pb	Joh	P	Rem	Br-L	U	4	Tim	Wo	—	4	D	Opt.	5600	34x7	34x7
Gotfredson RW-56	3	3395	Her	6	4 x4½	38.4	Pb	Joh	P	Rem	Br-L	U	5	Tim	Wo	—	4	D	Opt.	6600	S 36x5	S 36x5 D

1930 COMMERCIAL CARS BUILT IN THE UNITED STATES

Make and Model	Capacity—tons	Chassis price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gearset	Location	No. Spds. for.	Rear Axle	Final Drive	Reduction in Low	Brakes, foot	Brakes, hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Standard Tire Sizes Rear
Gotfredson RW-66A	3½	4475	Her	6	4⅜x4¾	45.9	Po	Joh	P	Rem	Br-L	U	7	Tim	Wo	—	4	D	Opt.	7800	S 36x5	S 36x6 D
Gotfredson RW-86A	5	5200	Her	6	4⅜x4¾	51.3	Pb	Joh	P	Rem	Br-L	C	7	Tim	Wo	—	4	D	Opt.	9000	S 36x6	S 36x7 D
Gotfredson RW-106A	7½	5675	Her	6	4⅜x4¾	51.3	Pb	Joh	P	Rem	Br-L	C	7	Tim	Wo	—	4	D	Opt.	10000	S 36x7	S 36x8 D
Gotfredson RW-206A	12	10500	Bud	6	4¾x6	54.15	Pb	Joh	P	Rem	Br-L	C	7	Tim	Wo	—	6	D	Opt.	14000	S 36x8	S 36x8 D
Gramm B	1½	1395	Lyc S	6	3¼x4½	25.3	Pb	Zen	Vac	Aut	Cov	U	4	Tim	Sp	32	4	R	140	3300	30x5	30x5 D
Gramm C	2	1795	Lyc T S	6	3⅞x5	36.2	Pb	Zen	Vac	Aut	Cov	U	4	Tim	Sp	29	4	R	160	3800	32x6	32x6 D
Gramm D	2½	1995	Lyc T S	6	3⅞x5	36.2	Pb	Zen	Vac	Aut	Ful	U	4	Wis	D R	30	4	R	160	4920	32x6	32x6 D
Gramm E	3	2795	Lyc T S	6	3⅞x5	36.2	Pb	Zen	Vac	Aut	Ful	U	4	Wis	D R	35	4	R	150	5200	34x7	34x7 D
Gramm EY	3	3535	Con 20 R	6	4⅛x4¾	36.04	Pb	Zen	Vac	Aut	Ful	U	4	Wis	D R	26	4	R	190	6750	32x6	32x6 D
Gramm GY	4	4345	Con 21 R	6	4⅜x4¾	45.9	Pb	Zen	P	L-N	Ful	U	4	Wis	D R	28	4	R	210	7200	34x7	34x7 D
Gramm HY	5	6545	Con 16 H	6	4¾x5¾	54.15	Pb	Zen	P	L-N	Ful	U	4	Wis	D R	25.2	4	R	236	9600	36x8	36x8 D
Gramm T-35	3	3595	Lyc T S	6	3⅞x5	36.2	Pb	Zen	Vac	Aut	Ful	U	4	Wis	D R	39.6	4	R	173	7100	36x5 S	36x10 S
Gramm T-45	4	3995	Lyc T S	6	3⅞x5	36.2	Pb	Zen	Vac	Aut	Ful	U	4	Wis	D R	39.6	4	R	173	7600	36x5 S	36x12 S
Gramm T-60	5	4745	Con 21 R	6	4⅜x4¾	45.9	Pb	Zen	Vac	Aut	Ful	U	4	Wis	D R	—	4	R	173	8700	36x6 S	36x14 S
Hahn 7 H	¾-1	1098	——	6	2⅞x4¾	19.84	P	Zen	Vac	Aut	Br-L	U	3	——	Sp	5.8	4	D	124	3100	——	——
Hahn 17 H	1-1½	1430	Cont	6	3⅜x4	—	P	Zen	Vac	—	Br-L	U	4	Tim	—	5.8	4	D	142	3750	30x5	30x5
Hahn 37 H-37 H L	2-2½	1925	Cont	6	3⅜x4⅝	27.34	P	Str	Vac	—	Br-L	U	4	Tim	—	5⅛	4	D	153	4600	30x5	30x5
Hahn 39 H-39 H L	2½-3	2898	Cont	6	4 x4⅛	38.4	P	Str	Vac	—	Br-L	U	4	Tim	—	6⅛	4	D	164	5800	32x6	32x6
Hahn 47 H B-47 H B L	3-3½	3700	Cont	6	4 x4½	38.4	P	Str	Vac	—	Br-L	U	4	Tim	—	7.8	4	D	151	6900	34x7	34x7
Hahn 47 H D-47 H D L	3½-4	3900	Cont	6	4 x4½	38.4	P	Str	Vac	—	Br-L	U	4	Tim	—	7.8	4	D	151	7500	34x7	34x7 D
Hahn 67 H-67 H D	4-5	4950	Cont	6	4⅜x4¾	45.94	P	Str	Vac	—	Br-L	U	4	Tim	—	10.8	4	D	151	8842	36x8	36x8 D
Indiana 200	1	1195	Wis F	6	3¼x4½	25.3	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 36000	Sp	20.71	4	Tr	137	3400	30x5	30x5
Indiana 300	1½	1475	Wis F	6	3¼x5¼	25.3	Pb	Zen	Vac	Aut	Br-L 20	U	3	Col 55001	Sp	21.26	4	Tr	149	3650	32x6	32x6
Indiana 111 X W	2	1850	Her Ox	4	4 x5	25.6	Pb	Str	Vac	Eis	Br-L 35	U	4	Wis 4611	Sp	36.60	R	Tr	120	3830	32x6	32x6 D
Indiana 400	2	2495	Wis Y	6	3⅜x5	27.3	Pb	Str	Vac	Aut	Br-L 35	U	4	Cla B 506	Sp	30.33	4	Tr	157	4800	32x6	34x7
Indiana 115 A	2½	2740	Her Ox	4	4 x5	25.6	Pb	Str	Vac	Eis	Br-L 35	U	4	Cla B 720	Sp	42.80	R	Tr	132	5000	32x6	34x7 D
Indiana 615 A	2½	3070	Wis Y	6	3⅜x5	27.3	Pb	Str	Vac	Eis	Br-L 35	U	4	Cla B 720	Sp	30.33	R	Tr	136	5190	32x6	34x7 D
Indiana 126	3	3495	Her L	4	4½x5¾	32.4	Pb	Str	Vac	Eis	Br-L 557	C	7	Tim 65704	Wo	80.7	R	Js	162½	7400	36x5	36x10 S
Indiana 127	3	3190	Her K	4	4¼x5¾	28.9	Pb	Str	Vac	Eis	Br-L 51	U	5	Cla B 720	Sp	41.72	R	R	141	6490	32x6	34x7 D
Indiana 626	3	4185	Wis H	6	4 x5	38.4	Pb	Str	Vac	Eis	Br-L 55	C	7	Tim 65704	Wo	80.7	R	Js	168½	7625	36x6 S	36x10 S
Indiana 627	3	3725	Wis H	6	4 x5	38.4	Pb	Str	Vac	Aut	Br-L 55	U	4	Cla B 720	Sp	42.80	R	R	162½	6500	36x5 S	36x10 S
Indiana 127 A W	3	3625	Her K	4	4¼x5¾	28.9	Pb	Str	Vac	Eis	Br-L 51	U	5	Wis 69311	Sp	41.72	R	Tr	141	6800	32x6	34x7 D
Indiana 627 A W	3	3925	Wis H	6	4 x5	38.4	Pb	Str	Vac	Eis	Br-L 51	U	5	Wis 69311	Sp	41.72	R	Tr	147	6800	32x6	34x7 D
Indiana 138	4	4380	Her L	4	4½x5¾	32.4	Pb	Str	Vac	Eis	Br-L 60	C	7	Tim 66700 D	Wo	83.1	R	R	162½	7850	36x5	36x12 S
Indiana 638	4	4955	Wis H	6	4 x5	38.4	Pb	Str	Vac	Eis	Br-L 60	C	7	Tim 66700 D	Wo	83.1	R	R	168½	8100	36x5	36x12 S
Indiana 41	5	5460	Her G	4	4¾x5¾	36.1	Pb	Str	Vac	Eis	Br-L 60	C	7	Tim 68700 D	Wo	95.0	R	R	172	9600	36x6	40x12 S
Int. Harvester Sp. Del.	¾	720	Wak X A	4	3½x4½	19.6	Pb	Zen	Vac	Rem	Mec	U	3	Eat 502 R	Sp	15.1	4	4	124	2200	30x5.25	30x5.25
Int. Harv. 6 Spd. Spec.	1	820	Wak X A	4	3½x4½	19.6	Pb	Zen	Vac	Rem	Mec	U	3	Eat 1124	Sp	*52.6	4	4	124	2430	30x5	30x5
Int. Harvester S-24	1¼	1160	Lyc C T	4	3¾x5	22.5	Pw	Zen	Vac	Rem	Own	U	3	Eat 1002	Sp	21.3	4	4	130	3200	30x5	30x5
Int. Harvester S-26	1¼	1310	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	Rem	Own	U	3	Eat 1002	Sp	21.3	4	4	130	3250	30x5	30x5
Int. Harvester SF-34	1½	1450	Lyc C T	4	3¾x5	22.5	Pw	Zen	Vac	Rem	Own	U	3	Eat 1502	Sp	22.6	4	4	140	3520	30x5	32x6
Int. Harvester SF-36	1½	1600	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	Rem	Own	U	3	Eat 1502	Sp	22.6	4	4	140	3570	30x5	32x6
Int. Harvester SD-44	2	1590	Lyc C T	4	3¾x5	22.5	Pw	Zen	Vac	A B	Own	U	4	Eat 2002	Sp	40.6	4	4	117	3700	30x5	32x6
Int. Harvester SD-46	2	1740	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	A B	Own	U	4	Eat 2002	Sp	40.6	4	4	117	3750	30x5	32x6
Int. Harvester SF-46	2	1950	Lyc 4 S L	6	3¼x4½	25.3	Pb	Zen	Vac	Rem	Own	U	4	Eat 2002	Sp	40.6	4	4	140	4000	32x6	32x6 D
Int. Harvester 54-C	2½	3200	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Own A M 428	Ch	51.8	R	D	140	6400	36x5	36x10
Int. Harvester 54	2½	3550	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Eat 54 65000	D R	53.7	R	D	140	6345	36x5	36x
Int. Harvester 74-C	3½	4550	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Own A M 427	Ch	*86.0	R	D	154	8715	36x6	40x12
Int. Harvester 74	3½	4550	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Eat 74 1000	D R	61.6	R	D	160	8175	36x6	40x12
Int. Harvester 104-C	5	4800	Own	4	4¼x5	28.9	C S	Zen	Gra	R B	Own	U	4	Own A M 427	Ch	86.0	R	D	154	8890	36x6	40x14
Int. Harvester HS-54	2½	3850	H-S 151	4	4¼x5½	28.9	Pb	Zen	Vac	R B	Own	U	5	Eat 54 65000	D R	60.5	4	4	*148	8000	36x5	36x12 S
Int. Harvester HS-54-C	2½	3850	H-S 151	4	4¼x5½	28.9	Pb	Zen	Vac	R B	Own	U	5	Own A M 428	Ch	63.8	4	4	*148	8665	34x5 S	36x12 S
Int. Harvester HS-74	3½	4850	H-S 152	4	4¾x5½	36.1	Pb	Zen	Vac	R B	Own	U	5	Eat 74 1000	D R	70.5	4	4	*160	10700	34x5 S	36x7 D
Int. Harvester HS-74-C	3½	4850	H-S 152	4	4¾x5½	36.1	Pb	Zen	Vac	R B	Own	U	5	Own A M 427	Ch	79.1	4	4	*160	11000	34x6 S	36x7 D
Int. Harv's'r NS-104-C	5	5500	H-S 152	4	4¾x5½	36.1	Pb	Zen	Vac	R B	Own	U	5	Own A M 427	Ch	90.5	4	4	*160	11095	34x6	36x8 D
International A-5	3	——	Own	6	3⅜x4½	31.54	Pb	Zen	—	—	Own	U	5	——	——	——	—	—	—	——	——	——
*Larrabee 20	1	1595	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	Gra	Rem	Br-L	U	3	Col	Sp	4.15	4	D	142	4170	30x5	30x5
*Larrabee 30	1½	1875	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	Gra	Rem	Br-L	U	3	Col	Sp	4.15	4	D	161	4550	32x6	32x6
*Larrabee 40	2	2965	Con 16 R	6	4 x4⅛	38.4	Pb	Zen	Gra	Rem	Br-L	U	4	Wis	D R	5.35	4	D	176	5950	32x6	32x6 D
*Larrabee 50	2½	3285	Con 16 R	6	4 x4⅛	38.4	Pb	Zen	Gra	Rem	Br-L	U	4	Wis	D R	5.35	4	D	183	6030	32x6	32x6 D
*Larrabee 60	3	3980	Con 18 R	6	4 x4½	38.4	Pb	Zen	Gra	Rem	Br-L	U	4	Tim	Wo	5.35	4	D	195	7140	34x7	34x7 D
*Larrabee 70	3½	4600	Con 20 R	6	4¼x4¾	40.8	Pb	Zen	Gra	Rem	Br-L	C	7	Tim	Wo	9.5	4	D	205	7740	34x7	34x7 D
Larrabee 80	5	5200	Con 21 R	6	4⅜x4¾	—	Pb	Zen	Gra	Rem	Br-L	C	7	Tim	Wo	—	4	D	205	9150	36x8	36x8 D
Mack BB	1½	3500	Own	4	4¼x5	28.9	P&S	Str	Vac	N E	Own	U	4	Own	Hyp	Opt	4	D	165½	——	32x6	32x6 D
Mack BB	1½	3600	Own	4	4¼x5	28.9	P&S	Str	Vac	N E	Own	U	4	Own	Hyp	Opt	4	D	177½	——	32x6	32x6 D
Mack BG	1½	3300	Own	6	3⅝x5½	—	—	—	—	—	—	—	—	——	——	—	—	—	138–168	——	——	——
Mack AB	1½-2	3100	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	Ch	Opt	R	D	2-Opt	——	36x4 S	36x7 S
Mack AB	1½-2	3550	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	D R	Opt	R	D	2-Opt	——	36x4 S	36x7 S
Mack AB	2½-3	3500	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	Ch	Opt	R	D	2-Opt	——	36x4 S	36x8 S
Mack AB	2½-3	3950	Own	4	4¼x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	D R	Opt	R	D	2-Opt	——	36x4 S	36x8 S
Mack BJ	3-4	5800	Own	6	4½x5½	48.6	P&S	Str	Vac	N E	Own	C	4	Own	D R	Opt	4	D	3-Opt	——	36x8	36x8 D
Mack AK	3½-5	5150	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	4	Js	3-Opt	——	36x5 S	36x5 D S
Mack AK	3½-5	5250	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	C	4	Own	D R	Opt	4	D	3-Opt	——	36x5 S	36x5 D S
Mack AC	3½-5	4950	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	Js	R	3-Opt	——	36x5 S	40x10 S
Mack AC	5½-7	5500	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	Js	R	3-Opt	——	36x6 S	40x12 S
Mack AC	7½	6000	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	Js	R	3-Opt	——	36x7 S	40x14 S
Mack AP	7½	9500	Own	6	5 x6	60.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	R	Js	191	——	36x7 S	40x8 D S
Mack AB Tractor	5-6	3500	Own	4	4½x5	28.9	P&S	Str	Gra	R B	Own	U	4	Own	Ch	Opt	R	D	122½	——	36x4 S	36x4 D S
Mack AK Tractor	7-10	5150	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	4	Js	128	——	34x5 S	36x5 D S
Mack AC Tractor	7-10	4950	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	Js	R	128	——	34x5 S	36x5 D S
Mack AC Tractor	11-14	5500	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	Js	R	128	——	34x6 S	36x6 D S
Mack AC Tractor	15	6000	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	Js	R	128	——	34x7 S	36x7 D S
Mack AP Tractor	15	9500	Own	6	5 x6	60.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	R	Js	147	——	34x7 S	36x7 D S
Mack AC 6-wheel	10	7500	Own	4	5 x6	40.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	4 R	Js	2-Opt	——	36x7 S	40x12 S
Mack AP 6-wheel	10	12000	Own	6	5 x6	60.0	P&S	Str	Gra	R B	Own	J	4	Own	Ch	Opt	4 R	Js	2-Opt	——	36x7	40x12 S
Moreland A-6	*6800	1275	Con 34 L	6	2⅞x4¾	19.84	Pb	Zen	Vac	Aut	Br-L 20	U	4	Tim 52000 H	Sp	24.17	4	D	134	3000	32x6.75	32x6.75
Moreland R R-6	*9300	1850	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	P	Aut	Br-L 35	U	4	Tim 54000 H	Sp	32.95	4	D	158½	4000	32x6	32x6
Moreland B-6	*12000	2200	Con 16 C	6	3⅜x4⅝	27.3	Pb	Zen	P	Aut	Br-L 35	U	4	Tim 63721 H	Wo	34.8	4	D	158½	4500	34x7	34x7
Moreland E-6	*15000	3600	Her W X C	6	4 x4½	38.4	Pb	Zen	P	Aut	Br-L 51	U	4	Tim 65000 H	Wo	34.8	*4	D	182	6000	34x7	34x7 D
Moreland Ex. 6	*19000	3750	Her W X C	6	4 x4½	38.4	Pb	Zen	P	Aut	Br-L 51	U	4	Tim 65704 N	Wo	46.0	*4	D	182	6500	36x4 S	36x8 S
Moreland H-6	*22000	4650	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	P	Aut	Br-L 55	C	7	Tim 66702 W	Wo	82.3	*R	D	196	8000	36x5 S	36x10 S
*Moreland B D W-6	*15000	3200	Her W X B	6	3¾x4	33.7	Pb	Zen	P	Aut	Br-L 35	U	4	Own	Wo	41	4	D	160	5800	34x7	34x7
*Moreland E D-6	*23000	4900	Her W X C	6	4 x4½	38.4	Pb	Zen	P	Aut	Br-L 51	U	5	Own	Wo	52.2	*4	D	196	8500	36x8	36x8
*Moreland H D S-6	*30000	5850	Her Y X C	6	4⅜x4¾	45.9	Pb	Zen	P	Aut	Br-L 60	C	7	Own	Wo	81.6	*4	D	220	10500	36x6 S	36x8
*Moreland S D-6	*34000	6450	Her Y X C 2	6	4½x4¾	48.6	Pb	Zen	P	Aut	Br-L 60	C	7	Own	Wo	89.0	*4	D	221	11500	36x7 S	36x10 S
*Moreland T D-6	*34000	8000	Con 15 H	6	4½x5¾	48.6	Pw	Str	P	Aut	Br-L 70	C	7	Own	Wo	98.5	*4	D	221	12500	36x7 S	36x10 S
*Fleet Arrow F A-1	1½-2	2450	Own F A	6	3½x5	29.5	Pb	Str	A P	Rem	Own	U	3	Own	Sp	33.3	4	Tr	140	3950	32x6.00	34x7
*Pierce-Arrow F A-1	1½-2	2450	Own	6	3½x5	29.4	Pw	Str	P F	Del	Own	U	3	Tim	St	21.4	4	Tr	140	4100	32x6	32x6 D
*Pierce-Arrow X A-1	2	3500	Own	4	4 x5½	25.6	Pw	Str	Pre	Del	Own	C	4	Own	Wo	44.2	D	R	150	6750	36x4	36x5 D S
*Pierce-Arrow X B-1	3	3750	Own	4	4 x5½	25.6	Pw	Str	Pre	Del	Own	C	4	Own	Wo	48.1	D	R	150	6830	36x5	36x5 D S
*Pierce-Arrow H B-1	5	4500	Own	4	4 x5½	25.6	Pw	Str	Pre	Del	Own	C	7	Own	Wo	95.0	D	R	156	8400	36x5	36x6 D S
*†Pierce-Arrow W C-1	4	5100	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	41.5	D	R	162	8780	36x5	36x6 D S
*†Pierce-Arrow R D-1	5	5400	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	40.5	D	R	162	9440	36x6	36x7 D S
*†Pierce-Arrow R F-1	7½	5600	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	51.9	D	R	168	10320	36x6	40x8 D S
†Pierce-Arrow R F-T	7½	5600	Own	4	4½x6¾	32.4	Pw	Str	Pre	Del	Own	C	4	Own	Wo	51.9	D	R	132	940	36x6	36x8 D S
Relay 20 B	1	1700	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	25.7	4	D	142	4100	B 30x5	B 30x5
Relay S 11 B	1½	1900	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	30.0	4	D	162	4500	B 30x5	D B 30x5
Relay 30 A	1½	2990	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	34.5	4	D	168	5300	B 34x5	D B 34x5
Relay 40 A	2	3240	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Own	Relay	34.5	4	D	168	5500	B 36x6	D B 36x6
Relay 50 C	2½	4415	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Own	Relay	58.5	4	D	175	7300	B 36x6	S 36x10
Relay 60 C	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Own	Relay	58.5	4	D	175	7450	B 36x6	S 36x12
Relay 70 C	3½	5250	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Cov	C	8	Own	Relay	84.2	R	D	175	8600	B 36x6	S 40x12
Relay 80 C	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Cov	C	8	Own	Relay	84.2	R	D	175	8800	B 36x6	S 40x14

Major Specifications and Mechanical Details of 1930 Commercial Cars Built in the United States

Make and Model	Capacity—tons	Chassis price	Engine	No. of Cyl.	Bore and Stroke	Tax H. P.	Oil System	Carburetor	Fuel Feed	Ignit. System	Gearset	Location	No. Spds. for.	Rear Axle	Final Drive	Reduction in Low	Brakes, foot	Brakes, hand	Standard Wheel Base	Chassis Weight	Standard Tire Sizes Front	Rear
Reo B A	½	895	Con 16 E	6	3⅜x4	27.3	Pb	Sch	Vac	Rem	W-G	U	3	Sal	Sp	14.63	4	Tr	115	2290	28x5.25	28x5.25
Reo D A	1	995	Con 16 E	6	3⅜x4	27.3	Pb	Sch	Vac	Rem	W-G	U	3	Own	Sp	18.4	4	Tr	123	2755	30x5	30x5
Reo D C	1	1075	Con 16 E	6	3⅜x4	27.3	Pb	Sch	Vac	Rem	W-G	U	3	Own	Sp	18.4	4	Tr	138	2850	30x5	30x5
Reo F A	1½	1295	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	22.96	4	Tr	137	3525	32x6	32x6
Reo F E	1½	1395	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	22.96	4	Tr	152	3700	32x6	32x6
Reo F F	1½	1395	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	22.96	4	Tr	156	3750	32x6	32x6
Reo F H	2	1545	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	37.6	4	Tr	142	4165	32x6	32x6 D
Reo F C	2	1595	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	37.62	4	Tr	152	4025	32x6	32x6 D
Reo F D	2	1695	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	37.62	4	Tr	168	4075	32x6	32x6 D
Reo G A	3	2035	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	41.05	4	Tr	163	4625	32x6	32x6 D
Reo G C	3	2140	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	41.05	4	Tr	179	4850	32x6	32x6 D
Reo G D	3	1985	Own	6	3⅜x5	27.3	Pb	Sch	Vac	Rem	Own	U	4	Own	Sp	46.2	4	Tr	134	4570	32x6	32x6 D
Republic Fleetmaster	*7000	1295	Lyc	6	3¼x4½	—	Pb	Zen	Vac	Aut	Br-L	U	4	Cla	Sp	28.3	4	Tr	144	3300	6.00x20 B	32x6
Republic F-1	*12000	2195	Lyc	6	3¼x4½	—	Pb	Zen	Vac	Aut	Ful	U	4	Eat	Sp	43.0	4	D	155	4850	32x6	32x6 D
Republic H-1	*15000	2985	Lyc	6	3⅞x5	—	Pb	Zen	Vac	Aut	Ful	U	4	Eat	Sp	36.0	4	D	163	5750	34x7	34x7 D
Republic L-1	*18000	3595	Lyc	6	3⅞x5	—	Pb	Zen	Vac	Aut	Ful	U	4	Eat	D R	48.0	4	D	180	6900	36x8	36x8 D
Republic M-1	*20000	3800	Waukesha	6	4 x4⅜	—	Pb	Zen	Vac	Aut	Br-L	U	5	Eat	D R	53.0	D	R	171	6900	36x8	36x8 D
Rugby Model 401	1	*775	Con	4	3⅜x4¼	18.2	Pb	Til	Vac	Aut	Own	C	3	Own	Sp	14.79	4	4	107	2325f	28x4.75	28x4.75
Service 20 Y	1	1600	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Col	Sp	25.5	4	D	142	3900	B 30x5	B 30x5
Service S 11 Y	1½	1990	Bud H S 6	6	3⅜x4½	27.3	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Sp	29.2	4	D	162	4300	B 30x5	D B 30x5
Service 40 Z	2	3240	Bud D S 6	6	3⅝x5	31.2	Pw	Zen	Vac	Aut	Br-L	U	4	Tim	Wo	34.8	4	D	168	4900	B 36x6	D B 36x6
Service 60 Z	3	4480	Bud B U S	6	4 x5⅛	38.4	Pw	Zen	Vac	Aut	Br-L	U	5	Tim	Wo	63.0	4	D	175	7100	S 36x5	S 36x12
Service 80 Z	4	5330	Bud B A 6	6	4⅛x5⅛	40.8	Pw	Zen	Vac	Aut	Br-L	C	7	Tim	Wo	98.2	R	D	175	8400	S 36x6	S 36x14
Standard 2½ K	2½-3½	3200	Con K 4	4	4¼x5¼	27.2	Pb	Str	Vac	Aut	Br-L 35	C	4	Tim 65600	Sp Wo	34.8	R	D	147	5400	36x5 S	36x8 S
Standard 3½ K	3½-5	4350	Con L 4	4	4½x5½	32.4	Pb	Str	Vac	Aut	Br-L 55	C	7	Tim 66700	Sp Wo	83.0	R	D	160	7485	36x5 S	36x12 S
Standard 5 K	5-7	5250	Con B 5	4	4¾x6	36.1	Pb	Str	Vac	Aut	Br-L 60	C	7	Tim 68700	Sp Wo	83.6	R	D	164	8700	36x6 S	40x14 S
Stewart 30	1	695	Lyc	4	3⅜x4½	—	Pb	Str	Vac	Del-R	Clark	U	4	Sal	Sp	6.6	4	D	130	——	6.50x20	6.50x20
Stewart 30 X	1	795	Lyc	6	2⅞x4½	—	Pb	Str	Vac	Del-R	Clark	U	4	Sal	Sp	6.6	4	D	130	——	6.50x20	6.50x20
*Stewart 16	1¼	1295	Lyc C T	4	3⅜x5	22.5	Pb	Str	Vac	Rem	Ful	U	4	Cla	Sp	24.0	4	D	130	3326	32x6	32x6
*Stewart 16 X	1¼	1295	Lyc 4 S L	6	3¼x4½	25.3	Pb	Str	Vac	Rem	Ful	U	4	Cla	Sp	24.0	4	D	130	3326	32x6	32x6
Stewart 26 X W	2	2290	Lyc T	6	3⅝x5	31.5	Pw	Str	Vac	Rem	Ful	U	4	Tim	Wo	29.0	4	D	165	5095	32x6	32x6 D
*Stewart 18 X	2½	2690	Lyc T	6	3⅝x5	31.5	Pw	Str	Vac	Rem	Ful	U	4	Tim	Wo	29.0	4	D	165	5788	32x6	32x6 D
Stewart 32 X	2½	1990	Lyc	6	3⅝x4¾	31.54	Pw	Str	Vac	Rem	Ful	U	4	Tim	Wo	7.25:1	4	D	165	——	32x6	32x6 D
Stewart 33 X	3	3290	Lyc	6	3⅝x5	31.54	Pw	Str	Vac	Rem	Ful	U	4	Tim	Wo	7.25:1	4	D	165	——	34x7	34x7 D
Stewart 19 X	3½	3690	Lyc F	6	3⅞x5	36.2	Pw	Str	Vac	Rem	Ful	C	12	Tim	Wo	105.1	4	D	165	6990	36x5	36x10
Stewart 28 X	1½	1495	Lyc 4 S L	6	3¼x4½	25.3	Pb	Str	Vac	Rem	Ful	U	4	Cla	Sp	27.3	4	D	136	3840	30x5	30x5 D
Stewart 29 X	2	1695	Lyc 4 S L	6	3¼x4½	25.3	Pb	Str	Vac	Rem	Ful	U	4	Cla	Sp	27.3	4	D	145	4188	32x6	32x6 D
Stewart 31 X	5	4990	Lyc	6	4⅜x5⅛	45.9	Pw	Str	Vac	Rem	Ful	C	8	Tim	Wo	10.5:1	4	D	165	——	36x6 S	36x6 S D
Stewart 27 X	6-7	5700	Waukesha	6	4⅜x5¼	45.99	Pw	Str	Vac	Rem	Ful	U	8	Tim	Wo	93.81	4	D	165	9700	36x7	40x7 D
Studebaker GN-P	¾	845	Own	6	3⅜x4¼	27.3	P C	Str	P	Rem	Own	U	3	Own	Sp	14.3	4	4	115	——	19x6.00	19x6.00
Studebaker GN-S	1	1045	Own	6	3⅜x4¼	27.3	P C	Str	P	Rem	Own	U	3	Own	Sp	13.8	4	Js	130	——	20x6.00	30x5
Studebaker GK-N	1	1095	Own	6	3⅜x4⅝	27.3	P C	Str	P	Rem	Own	U	3	Own	Sp	13.7	4	Js	146	2830	30x5	30x5
Studebaker GN-N	1¼	1245	Own	6	3⅜x4¼	27.3	P C	Str	P	Rem	Clark	U	4	Clark	Sp	33.5	4	Js	146	——	30x5	32x6
Studebaker 77	2½	2765	Own	8	3½x4⅜	39.2	P C	Str	P	Rem	Ful	U	3	Eat	Sp	19.8	4	Js	158	4745	20x6.75 B	20x6.75 B
Studebaker 88	3	3165	Own	8	3½x4¾	39.2	P C	Str	P	Rem	Ful	U	3	Eat	Sp	19.8	4	Js	184	4920	20x7.50 B	20x7.50
Studebaker 99	3½	3665	Own	8	3½x4¾	39.2	P C	Str	P	Rem	Ful	U	4	Eat	Dr	24.6	4	Js	184	5400	20x7.50 B	20x7.50
Victor 35	1½	1895	Con	6	3¾x4	27.3	Pb	Zen	Vac	Rem	Cov	U	3	Tim	Sp	—	4	D	144	3200	30x5	30x5 D
Victor 45	2½	2495	Her	6	3¾x4½	33.7	Pb	Zen	Vac	Rem	Ful	U	4	Wis	D R	—	4	D	148	4500	32x6	32x6 D
Victor 75	3½	3895	Her	6	4 x4½	38.4	Pb	Zen	Vac	Rem	Ful	U	4	Wis	D R	—	4	D	162	6000	34x7	34x7 D
Whippet 96 A	½	380	Own 96 A	4	3¼x4¾	15.6	Pb	Til	Vac	Aut	Own	U	3	Own	Sp	14.75	4	R	103¼	1659	28x4.75	28x4.75
Whippet 6 C-101	1½	645	Own 98 A	6	3¼x3⅞	23.4	Pb	Til	Vac	Aut	Ful	U	4	Cla-B 364	Sp	33.5	4	R	131	2540	30x5	30x5
†White 15 B	1	1545	Own G K A	4	3¾x5¼	22.5	C S	Zen	Vac	L-N	Own	C	4	Own	Sp	18.6	R	R	133½	3242	30x5	30x5
†White 57	1¼	2725	Own G R C	4	4 x5¾	25.6	Pw	Zen	Vac	L-N	Own	U	4	Own	Sp	19.3	R	R	146	3755	32x6	32x6
†White 20 A	1½	2125	Own G K A	4	3¾x5¼	22.5	C S	Zen	Vac	L-N	Own	C	4	Own	D R	32.1	R	R	145½	4412	34x5	34x5 D P
†White 56	2	3125	Own G R C	4	4 x5¾	25.6	Pw	Zen	Vac	Mag	Own	U	4	Own	Sp	26.2	R	D	165	5096	36x4 S	36x7 S
†White 51 A	2½	3750	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	Sp	35.5	R	D	170	6256	36x5 S	36x8 S
†White 55	3½	4650	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	I G	66.1	D	R	174	8402	36x5 S	40x5 S D
†White 52 T	3½	4700	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	I G	76.5	D	R	129½	8126	36x5 S	40x5 S D
†White 52	5	5100	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	5	Own	I G	92.3	D	R	174	9184	36x6 S	40x12 S
†*White 58	3	4400	Own G R B	4	4¼x5¾	28.9	Pw	Zen	Vac	Mag	Own	U	4	Own	I G	49.5	D	A	180	7400	36x5 S	36x5 S D
†White 60	1	1850	Own 2 A	6	3½x4½	29.4	Pw	Zen	Vac	Rem	Own	U	3	Own	Sp	17.9	4	D	138	3562	30x5	30x5
†White 61	1½	2450	Own 2 A	6	3½x4½	29.4	Pw	Zen	Vac	Rem	Own	U	4	Own	Sp	23.4	4	D	148	4612	30x5	30x5 D
Willys-Knight 15	1½	1545	Own K G T	6	2⅞x4¾	20.7	Pb	Til	Vac	Aut	Ful D U	U	3	Eat 1002	Sp	24.3	4	R	134	3300	30x5	32x6
Willys-Knight 16	1½	1595	Own K G T	6	2⅞x4⅜	20.7	Pb	Til	Vac	Aut	Ful D U	U	3	Eat 1002	Sp	24.3	4	R	151	3400	30x5	32x6
Willys-Knight 20	2	1945	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful D U	U	3	Eat 1504	Sp	28.4	4	R	150	3800	32x6	34x7
Willys-Knight 21	2	1995	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful D U	U	3	Eat 1504	Sp	28.4	4	R	164	3900	32x6	34x7
Willys-Knight 25	2½	2545	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful G U	U	4	Wis 6617 B	D R	30.3	4	R	150	4920	32x6	32x6 D
Willys-Knight 26	2½	2595	Own K G T	6	3⅜x4¾	27.3	Pw	Til	Vac	Aut	Ful G U	U	4	Wis 6617 B	D R	30.3	4	R	164	5020	32x6	32x6 D

GENERAL NOTATIONS

"REFERENCE MARKS apply to individual lines only and explanations are given under the subdivision for each company in the "SPECIAL NOTATIONS."

CAPACITIES given in this table are in tons or fractions of tons. *Shows maximum allowable gross weight.

TIRE EQUIPMENT where not otherwise indicated is solid.

WHEEL BASES given are standard, but optional wheel bases are available in many cases.

ENGINE—Bud, Buda; Con, Continental; Her, Hercules; Kgt, Knight; Lyc, Lycoming; Wak, Waukesha; Wis, Wisconsin.

LUBRICATION—Pb, pressure lubrication to main and connecting rod bearings; Pw, full pressure lubrication to all bearings, including wrist-pins; P&S, pressure with splash, CS, circulating splash; Sp, Splash.

CARBURETOR—Car, Carter; Hol, Holley; Joh, Johnson; Mar, Marvel; Sch, Wheeler-Schebler; Str, Stromberg; Stw, Detroit lubricator; Til, Tillotson; Zen, Zenith-Detroit.

FUEL FEED—Gra, Gravity; Pre, Pressure; Vac, Vacuum tank; P, Fuel pump; Auto-P, Auto pulse; E, Electric pump.

IGNITION—AB, American-Bosch; Aut, Electric Auto-Lite; Apo, Apollo; Del, Dayton Ergine Laboratory; Eis, Eisemann; L-N, Leece-Neville; N-E, North East; RB, Robert Bosch; Rem, Delco-Remy; Spl, Splitdorf.

TRANSMISSION—Br, L, Brown-Lipe; Cov Covert; Ful, Fuller; Mec, Mechanics Machine; Mun, Muncie; W-G, Warner Gear.

LOCATION—C Center, Amid; U, in unit with engine; J, Jack shaft.

REAR AXLE—Cla, Clark Equipment; Col, Columbia; Eat, Eaton; Sal, Salisbury; Tim, Timken, Wis, Wisconsin.

FINAL DRIVE—St, Straight bevel; Sp, Spiral bevel; Wo, Worm; DR, Double Reduction; Ch, Chain; IG, Internal Gear.

BRAKES—Js, Jack shaft; R, Rear wheels; D, Drive shaft; 4, four-wheel; Tr, Transmission; W, Westinghouse air brake.

TIRES—B, Balloon; D, Dual; S, Solid.

SPECIAL NOTATIONS

AMERICAN-LA FRANCE

*Chief model also available as 2½-ton model, 34x7 tire, dual rear, weight 6,400. Price $3,900.

AUTOCAR

†Engines in these models are located under the driver's seat.

DURANT LINE

*Price includes panel body.

GENERAL MOTORS TRUCK LINE

*Capacity given in all cases is maximum allowable total gross weight (straight rating), and includes chassis, cab, equipment, body and load.

Model T-19 is also available in three other types, with 145¾-inch wheel base having same straight ratings and standard tire combinations as listed for the 127¾-inch wheel base types shown in the table.

Model T-25 is also available in three other types, with 140-inch wheelbase having same straight rating and standard tire combinations and in two other types on the 127¾-inch wheelbase.

Model T-30 is also available in six other types, with 152 and 164 inch wheel bases, respectively, having same straight ratings and standard tire combinations as listed for the 136-inch wheel base types shown in the table.

Model T-42 is also available in nine other types, with 152, 164 and 175 inch wheel bases respectively, having same straight ratings and standard tire combinations as listed for the 136-inch wheel base types shown in the table.

Model T-60 is also available in nine other types, with 160, 180 and 200 inch wheel bases, respectively, having same straight ratings, and standard tire combinations as listed for the 140-inch wheel base types shown in the table.

Model T-60 Special is also available in six other types with 160¾, 180¾ and 200¾ inch wheel bases, respectively, having same straight ratings and standard tire combinations as listed for the 140¾-inch wheel base types shown in the table.

Optional rear axle gear ratios are available for all types and optional tire equipment is available for all types except Model T-11-1001.

FLEET-ARROW LINE

*Model F. A. 1 is also available as Model F. A. 2, at $2,500 on wheel base of 180 inches, weight 3,975 lbs., and as Model F. A. 3, at $2,550, with seven speed transmission on 180-inch wheel base, weight, 3,985 lbs.

GOTFREDSON LINE

*Six-wheeler.

GRAMM

*Models B, C, D and E are furnished in three wheel base lengths—others on request.

*Model T Series—Larger engines, pneumatic tires and special wheel bases, and 8 speed transmissions—optional at extra cost.

Model "GY"—190 and 210 in. wheel bases.
Model "HY"—210 and 236 in. wheel bases.
*Model "HY"—210 and 236 in. wheel bases. Tire sizes and electrical equipment optional, depending upon type of service—Coach or Van.

*Above models are all built in tractor wheel base lengths for semi-trailer use.

HAHN LINE

*Model 23 also available as Model 26, priced $1,495, on 144-inch wheel base, with Buda H. S. engine, 6-cyl. 3⅜x4½ inches rated 27.3 h.p., weight 3,200 lbs.

*Model 34 also available as Model 36, with Buda H. S. 6 engine (described above), weight 3,850 lbs.

*Model 44 also available as Model 46, priced $2,410, on 156-inch wheel base, with Buda H. S. 6 engine, as in Model 26, weight 4,200 pounds.

‡Model 56 also available on 171-inch wheel base.

INTERNATIONAL HARVESTER LINE

*Model HS-54 also available in the following wheel bases, 130-inch tractor, 170, 185 and 200-inch.

*Model HS-54-C also available in the following wheel bases, 130-inch tractor, 170, 185 and 200-inch.

†Frame is reinforced with inserted channels in each side rail, extending from dash to rear end.

*Model HS-74 also available in the following wheel bases, 144-inch tractor, 185, 210 and 235-inch.

*Models HS-74-C and HS-104-C also available in the following wheel bases, 146-inch tractor, 185, 210 and 235-inch.

All Model HS heavy-duty International truck models are equipped with built-in vibration dampered clutches.

LARRABEE

*Note—Bevel gear, worm or double reduction drive rear axle available in models 40 and 50. Bevel or double reduction axles available in 30. Worm axles in 60, 70 and 80. Three or more wheel bases in each model. All Larrabee models have hydraulic brakes; 40 up have vacuum booster.

MACK LINE

Other wheel bases furnished on all truck models.

On 6-wheel jobs, 4 rear wheels driven by chains, foot brake on 4 rear wheels.

Hyp.—Hypoid drive, single reduction.

MORELAND LINE

*Indicates six-wheel type vehicles.

PIERCE-ARROW LINE

*Model FA1 also available as Model FA2, at $2,550 on 160-inch wheel base, weight 4,150 lbs., and also as Model FA3, at $2,250 on 180-inch wheel base, weight 4,200 lbs.

*Model XA1 also available as Model XA2, at $3,550 on 162-inch wheel base, weight 6,800 lbs.

*Model XB1 is also available as Model XB2, at $3,800 on 180-inch wheel base, weight 6,900 lbs.

*Model HB1 is also available as Model HB2, at $4,550 on 180-inch wheel base, weight 8,500 lbs., and also as Model HB3, at $4,600 on 198-inch wheel base, weight 8,700 lbs.

*Model WC1 is also available as Model WC2, at $5,150 on 180-inch wheel base, weight 8,950 lbs., and also as Model WC3, at $5,250 on 198-inch wheel base weight 9,050 lbs.

*Model RD1 is also available as Model RD2, at $5,450 on 180-inch wheel base, weight 9,650 lbs., and also as Model RD3, at $5,500 on 198-inch wheel base, weight 9,750 lbs.

*Model RF1 is also available as Model RF2, at $5,650 on 204-inch wheel base, weight 10,500 lbs.

‡Seven-speed transmission also available.

REPUBLIC LINE

*Model 75-4 also available as Model 75-6, priced $1,495, on 128-inch wheel base, with Lycoming 4SL engine, 6-cyl. 3½ by 4½ inches, rated 25.3 h.p., weight 3,150 lbs.

*Model 76-4, also available as Model 76-6, priced $1,675, on 150-inch wheel base, with Lycoming 4SL engine, as in Model 75-6, weight 3,500 lbs.

‡Model 60-61, also available with four-wheel brakes, $3,155.

**Model 62, same as 60-61, on 171-inch wheel base, $3,949.

†Model 25W-25WRB available with four-wheel brakes

**Model 66, same as 65, on 200-inch wheel base, $3,750.

**Model 25W, 25WB and 25WBR also available in 3½-ton capacities as Models S25W, S25WB and S25WRB on wheel bases of 165, 156 and 124 inches, priced $3,695.

**Models 35 and 35B also available in 5-ton capacities on wheel bases of 170 and 157 inches, priced $5,145.

**Model 85 also available as Model 86 on 170-inch wheel base, price $2,150.

**Model 50-51 also available as Model 52 on 170-inch wheel base.

REO LINE

*Tonner in wheel base, 123, 138; 1½-ton in wheel base, 137, 156, 152; 2-ton in wheel base, 152, 168; 3-ton in wheel base, 168, 179, 184.

RUGBY

F—Chassis weight includes body.

STEWART LINE

Model 20 can also be supplied in 120 and 140-inch wheel base

*Models 16 and 16X can be supplied in 145-inch and 160-inch wheel base.

Model 28X can be supplied in 146, 160 and 176-inch wheel base.

Model 29X can be supplied in 160 and 176-inch wheel base.

*Model 26XW can be supplied in 148, 170 and 190 inch wheel base.

*Model 18X, 32X and 33X can be supplied in 148, 190 and 220-inch wheel base.

*Models 19X, 31X and 27X can be supplied in 148, 172, 190, 220 and 235-inch wheel base

WHITE LINE

*Bus Model 52 is equipped with Booster Brakes and 50B and 54 with air brakes. Model 58 with air brakes as optional equipment.

Model 60 gross weight capacity, with 32x6 tires, 8,000 lbs; 34x7.50 balloon tires optional at extra cost.

†Supplied in optional wheel bases.

FORD LINE

*Low speed axle 22.6 to 1.

Range of Automotive Stocks: Financial News

WEDNESDAY, JANUARY 22

NEW YORK STOCK EXCHANGE

Previous 1929-1930 High	Low	Div.		Sales	High	Low	Close	Net Change
104⅞	7	....	Advance Rumely ...	9,500	16½	15¼	15½	+ 1
119	15	....	do pf	3,600	33½	31	32⅝	+ 3⅛
223⅜	77	3	Air Reduction	18,000	125¼	118	120	— 5½
11¼	1	....	Ajax Rubber	500	2⅛	2	2⅛	+ ⅛
75½	35⅛	3	Allis Chalmers	2,600	54	53	53½	— ⅝
76½	27	....	Am. Bosch Magneto.	400	43	42⅞	42⅞	— ⅝
95⅞	7¼	7	Amer. Chain pf.		No sales today			
8⅞	2¼	....	Am. La France		No sales today			
514	120	4	Auburn	200	183¾	183	183¾	— 1¼
104⅜	25	2	Bendix Aviation	3,300	36	35¼	35⅝	— ⅝
136¾	37	3	Bohn Aluminum	2,400	48¾	47⅞	47⅞	— 1⅛
86⅞	26	4	Borg-Warner	1,700	36½	35¾	35¾	— ¾
63⅛	8½	....	Briggs Mfg. Co.	4,700	16	15⅝	15⅝	— ⅜
43½	17⅜	2	Briggs & Stratto ..		No sales today			
16¼	13	....	Brockway Motor ...		No sales today			
22⅞	8½	1	E. G. Budd Mfg.		No sales today			
12½	7¾	1	Budd Wheel	300	10½	10½	10½	+ ½
54¾	25	1.60	Bullard		No sales today			
61	50¼	3	Caterpillar Tractor..	600	58¼	57½	58¼	+ ¼
80¾	18	4.20	Checker Cab	6,000	40⅞	39	40⅞	+ 2⅛
47½	21⅞	....	Chicago Pneu. Tool.	600	24	23	23½	+ 1
28¾	27	3	Chicago Yellow Cab.		No sales today			
135	26	3	Chrysler Corp.	6,800	35⅛	34⅝	34¾	— ¼
61⅞	25	3	Clark Equipment ...		No sales today			
62⅝	18	2	Commercial Credit..	200	25⅞	25⅞	25⅞	— ⅛
105¾	70	6.50	do 6½s pf.	60	79	78½	79	+ 1
79	28⅛	1.60	Comm'l Invest. Trust	800	38	37⅞	38	+ ⅛
99	87	6.50	do pf.		No sales today			
28⅜	5⅝	....	Continental Motors..	1,800	6½	6⅜	6½	+ ⅛
80	66	3.50	Cutler-Hammer		No sales today			
231	80	4	Du Pont	2,200	115⅝	115	115¾	+ ½
76¾	18	3	Eaton Axle & Spring	600	30	28¾	29¾	....
174	50	6	Electric Auto-Lite ..	3,200	86½	85	86¼	+ ¼
104½	55	5	Electric Stor. Battery	500	71	70⅝	71	+ ½
22½	3¼	....	Emerson Brant A ...	600	5⅜	4½	5⅜	+ 1⅜
73¾	15	2.50	Evans Auto Load ..	300	21	20¾	21	+ 2
22⅜	5	.80	Federal Motors		No sales today			
37	24½	1.60	Firestone T. & R.	200	31	31	31	....
89⅝	82⅞	6	do pf.	1,000	83¼	82⅞	82⅞	— ½
20⅛	2⅛	....	Fisk Rubber	1,000	3⅜	3⅛	3⅜	+ ⅛
72½	8	....	do 1st pf.	10	14¾	14¾	14¾	— ¾
33⅜	5	....	Gabriel Snubber	100	6¼	6¼	6¼	+ ⅛
403	168⅛	6	General Electric	6,200	251½	248½	249½	+ ½
25	3	....	Gardner Motor		No sales today			
91¾	33¼	3	General Motors	28,600	40¼	39⅝	39⅝	— ⅝
126½	112	7	do 7s pf.	200	119¼	119¼	119¼	+ ¼
64⅛	26	2	Glidden Co.	300	32⅝	31½	32⅝	+ ⅛
106⅛	95	7	do pf.	70	101	101	101	+ 2½
105¾	38¼	4	Goodrich	100	43	43	43	— ¼
96⅝	95⅝	7	do pf.		No sales today			
154½	60	5	Goodyear T. & R. ..	500	65	65	65	+ ½
104⅞	86	7	do pf.	200	94¾	94¼	94¾	+ 1⅛
45	7⅜	....	Graham-Paige Motor	700	9¾	9¼	9⅜	+ ⅛
68⅜	5½	....	Hayes Body		No sales today			
52¾	13	2	Houdaille-Hershey ..	33,200	25¾	24⅝	25¾	+ ⅜
93½	38	5	Hudson Motor Car ..	5,500	57¼	56¼	56¼	— ⅝
82	18	2	Hupp Motor Car	1,800	21¾	21½	21½	— ⅛
32½	3½	....	Indian Motocycle ...	2,300	5½	5⅜	5½	— ¼
14¼	2	....	Intercon. Rubber	3,000	5⅛	5	5⅛	+ ⅛
142	65	2.50	Interna. Harvester ..	5,600	85	82½	83½	+ 1½
145	137	7	do pf.	600	141¼	141	141⅛	— ⅛
242¾	90	3	Johns-Manville	16,900	132	128¼	130¾	+ 2¾
16½	1½	....	Jordan Motor Car ..	600	2⅛	2	2⅛	....
24	3	....	Kelly-Springfield ...	1,100	5	4⅞	5	+ ¼
100	26	....	do 6s pf.		No sales today			
94⅞	16	....	do 8s pf.		No sales today			
59¾	18⅝	2	Kelsey-Hayes Wheel	2,800	25¼	24⅜	25	+ 1
8½	6¼	....	Lee Rubber & Tire..		No sales today			
61	37⅝	2.60	Link Belt	100	40	40	40	+ 1
114¾	55⅛	6	Mack Trucks	600	73	71	71½	— ½
89⅞	30	4.25	Marlin Rockwell ...	300	41	40	41	+ 1⅛
104	19	4	Marmon	900	23⅞	23	23	— ½
3½	3	....	Martin Parry		No sales today			
34⅝	9	2	Mengel	1,300	17	16½	17	+ ½
28⅞	3¼	....	Miller Rubber	1,500	4½	4⅛	4⅜	— ⅛
5	1½	....	Moon Motors	300	4¼	3¾	3¾	— ⅜
31¾	3¼	....	Moto Meter G & E .	1,700	5⅞	5¾	5⅞	+ ⅜
142	36	2	Motor Products	400	58⅛	58	58⅛	+ ⅛
44⅜	21	3	Motor Wheel Corp. .	100	27½	27½	27½	+ ⅝
81⅞	10	....	Mullins Mfg.		No sales today			
100⅞	14⅞	2	Murray Corp.	3,100	20¼	19¾	20	+ ½
118⅞	40	6	Nash Motors	2,200	53¾	52½	53⅛	+ ⅛
6¼	⅝	....	Norwalk T. & R. ...		No sales today			
45	8	....	do pf.		No sales today			
10⅞	2½	....	Omnibus Corp.		No sales today			
55	22½	2.50	Otis Steel	300	32¾	32¼	32¼	+ ¾
32½	13	1	Packard Motor Car.	3,100	16	15¾	15¾	— ¼
22½	5⅛	....	Peerless Motor Car.	300	7⅞	7½	7⅞	+ ⅛
26	21½	....	Pierce-Arrow		No sales today			
37½	17¾	6	do pf.		No sales today			
58½	28	2.60	Raybestos Manhattan	4,400	39½	38½	29½	+ ¼
31⅞	10⅛	.80	Reo Motors		No sales today			
12¼	3⅝	....	Reynolds Spring ...	900	4¾	4⅜	4⅞	+ ¼
66⅝	20⅛	....	Spicer Mfg. Co.	200	25¼	25¼	25¼	+ ¼
55⅞	38	3	do pf.		No sales today			
77	30	3.50	Stewart-Warner Spd.	1,300	41½	40¾	41⅛	+ ⅛
98	38¼	5	Studebaker Co.	1,500	43½	42¼	42¼	— 1¼
126	115	7	do pf.		No sales today			
34⅜	11½	.80	Timken Detroit Axle	200	15½	15¼	15½	— ⅜
139⅜	58½	3	Timken Roller Bear.	3,600	74	73⅛	73⅜	— ⅝
63	30	2.50	Trico	500	32½	32½	32½	— ⅝
65	15	....	U. S. Rubber	900	23½	23	23¼	+ ¼
92½	40⅛	....	do 1st pf.		No sales today			
42⅞	15	2	Warner Quinlan	900	19	18¾	18¾	....
67¾	36½	2	Westinghouse A. B. .	1,000	45¼	44½	45	....
53½	27¼	2	White Motors		No sales today			
61¼	19	2.50	Wilcox Rich A	200	29½	29	29	+ 1½
62	12⅜	2	do B	6,600	22½	21	22¼	+ 1¾
35	5¼	1.20	Willys-Overland ...	1,600	8⅜	8⅛	8⅜	— ⅛
80¼	67	7	do pf.		No sales today			
75½	75	4	Yale & Towne		No sales today			
51¼	7½	....	Yellow Tr. & C. ..	1,700	13⅞	13¼	13¼	— ¾

NEW YORK CURB EXCHANGE

Sales		High	Low	Close	Net Chge
8900	Cities Service..	28⅛	27⅞	28⅛—	⅛
	do pf		No sales today		
	Con Di Fibre...		No sales today		
100	Cord Corp	11½	11½	11½—	½
	Doehler D C...		No sales today		
1300	Durant Motor...	5½	5¼	5¼	...
	Fageol Motor...		No sales today		
100	Fedders	9⅛	9⅛	9⅛+	⅛
	Federal Mogul..		No sales today		
100	Federal Screw..	35	35	35	—1
200	Fiat	18	18	18	— ⅛
3800	Ford Canada...	31	30⅜	31	+ ⅛
800	Ford France....	6½	6½	6½	....
2100	Ford Ltd	10⅜	10⅜	10⅜	....
500	Franklin Mfg...	17	16¼	16¼—	1⅜
	Gen Tire & Rub		No sales today		
100	Gr'nf'ld T & D.	13	12⅛	12⅛—	⅞
	Hall Lamp		No sales today		
	Henney		No sales today		
	Hood Rubber...		No sales today		
	India Tire		No sales today		
	Isotta Fras		No sales today		
	Jaeger		No sales today		
	Lakey		No sales today		
	McQuay Norris.		No sales today		
	Midland Steel..		No sales today		
	Nat Rub Mach..		No sales today		
600	Paramount Cab.	12⅜	11¾	12¼—	⅜
	Perfect Circle..		No sales today		
	Pines Winter...		No sales today		
	Pitt Plate Glass		No sales today		
	Rolls Royce Am		No sales today		
	Ross Gear		No sales today		
	Safe T Stat....		No sales today		
	Seiberling		No sales today		
	Smith A O.....		No sales today		
	Sparks With ...		No sales today		
1500	Stutz Motor ..	3	2¾	2¾—	⅛
500	Thermoid Co ..	20⅛	18⅞	20⅛—	1
	Thompson Prod		No sales today		
	Triplex		No sales today		
	Tung Sol		No sales today		
	U S Asbestos...		No sales today		
200	Watson, J W...	1¾	1¾	1¾	...
	Wayne Pump ..		No sales today		
	West Auto		No sales today		
	Yellow Taxi N Y		No sales today		

NEW YORK OVER-THE-COUNTER

Div.		Bid	Asked
6	Am Hard Rubber	58	62
8	Dixon (J) Crucible.....	165	172
3.50	Doehler Die Casting.....	32	..
7	do pf	75	..
....	Eismann Magneto	20	30
7	do pf	80	90
....	Rolls Royce Am.....	10	15
....	do pf	15	25
....	Splitdorf Beth Elec.....	3	4

CHICAGO STOCK EXCHANGE

Sales		High	Low	Last
450	Acme Steel	97	96	97
200	Allied Motor Ind..	15¾	15¼	15½
100	Auburn Auto	185	185	185
2100	Bendix Aviation ..	36⅛	35	35
3100	Borg-Warner	36¼	35⅜	35⅝
50	Chicago Yellow Cab	27	27	27
1900	Cord Corp	12	11½	11¾
2300	Houdaille Hershey A	27¾	27¼	27¼
5200	do B	25½	24¾	25¼
50	La Salle Exten.....	3⅛	3⅛	3⅛
21	McCord R A.....	34	34	34
100	Modine	52½	52½	52½
235	Muskegon M S.....	17¼	16¼	17¼
800	Nachmann Spring..	25½	24	24
60	National Battery...	31	28	31
100	Noblitt Sparks	48½	48	48
150	Pines Winterfront..	39	38	39
250	Ross Gear	32⅞	32⅝	32⅞
28	Wayne Pump	9	9	9
40	do pf	30	30	30

CLEVELAND STOCK EXCHANGE

Sales		High	Low	Last
10	Firestone 6s pf....	84	84	84
250	India Tire	9¼	9	9¼
100	Jaeger Machine	26	26	26
135	Miller Rubber pf...	31¼	30½	30½
25	Ohio Brass B.....	74	73	74
25	do pf	101	101	101
50	Seiberling Rubber..	13⅜	13⅜	13⅜

DETROIT STOCK EXCHANGE

Sales		High	Low	Last
100	Baldwin Rubber....	10	10	10
225	Bower Roller Bear.	8¾	8¾	8¾
100	Diesel W Gil.....	18¾	18¾	18¾
265	Excello	15¾	15½	15¾
387	Federal Mogul	11⅞	11½	11½
315	Federal Screw	35⅜	35¼	35¼
800	Hall Lamp	14	13⅞	14
282	Houdaille Hershey B	25¼	24¾	25
300	Hutto Eng	5½	5½	5½
110	Kermath	8¾	8¾	8¾
600	Pittsburgh Forge ..	14¾	14½	14½
300	Packard	15⅞	15¾	15⅞
100	Timken Axle	15¾	15¾	15¾
400	Wilcox Rich B.....	22⅝	22½	22⅝

RUBBER

RUBBER EXCHANGE OF NEW YORK

	High	Low	Close	Prev. close
January.....	14.50	14.50	14.70a14.80	14.70
February.....	....	....	*14.90	14.90
March.....	15.00	15.00	*15.00	15.20
April.....	....	....	*15.10	15.40
May.....	15.40	15.40	‡15.30	15.60
June.....	....	....	*15.50	15.80
July.....	15.80	15.70	‡15.80	16.00
August.....	....	....	*16.00	16.20
September.....	16.20	16.10	*16.20	16.40
October.....	....	....	*16.40	16.60
November.....	....	....	*16.60	16.80
December.....	....	....	*16.80	17.00
Spot.....	....	....	*14.80	14.90
Sales (tons)....	....	....	632½	642½

Transferable notices, 5; so far, 662.
Market closed steady.

*Nominal. †Trading. ‡Bid.

OUTSIDE CLOSING PRICES

(Per pound, delivered New York.)

PLANTATION—	Bid	Asked
Ribbed and smoked sheets		
Spot	14½	14¾
January	14½	14¾
February	14⅝	14⅞
March	14¾	15
April-June	14¼	15½
July-September	15⅞	16⅛
Spot—		
First latex	15¼	15½
Thin pale latex	15⅜	15⅝
Clean thin brown crepe	12¾	13
*Specky crepe	12⅜	12¾
Rolled crepe	9¼	9⅜
No. 2 amber	13¼	13⅜
No. 3 amber	12⅞	13¼
No. 4 amber	12½	12¾
*Paras—		
*Up-river, fine, spot	16¼	16⅜
do coarse	8⅛	8⅜
*Accra, fine, spot.....	16⅜	16⅝
*Caucho Ball—Upper	8	8¼
Centrals—		
*Esmeralda	8¼	..
*Central scrap	8¼	..
Guayule, washed, dried	..	14
‡Balata—		
*Block Ciudad	41	42
*Surinam sheet	51	52
*Manaos block	45	46
Peruvian block	18	18½

***SCRAP RUBBER**

(Dealers' buying prices, f. o. b., New York)

Boots and shoes, black, ton..	$16.50	a18.00
Arctics, cwt	.50	a .60
Inner tubes, mixed, cwt.....	3.00	a 3.25
Inner tubes, red, cwt.....	3.37½	a 3.50
Tires, standard, mixed, ton.	10.00	a11.00
Inner tubes, No. 1, cwt.....	6.37½	a 6.50
Inner tubes, No. 2, cwt.....	3.00	a 3.25
Mixed hose, soft, cwt.....	.40	a .45
Hose, air brake, ton.....	10.00	a12.00

*Nominal. ‡Sold on sample only.

SCRAP METALS

Aluminum—	Buying	Selling
Cast scrap	13 —13½	15 —15½
Sheet scrap	13½—14	15¼—15¾
Clippings	16½—16¾	18½—19¼
Copper—		
Heavy mach. comp.	10¾—11¾	12 —12½
Heavy and wire....	13½—13¾	14¼—14⅜
Light and bottom..	12 —12¼	12¾—13
Auto radiators	8¼— 8½	9 — 9¼
Heavy cut and cru.	13½—13¾	14¾—15
Brass, heavy	9 — 9¼	9½— 9¾
Brass, light	7⅜— 7½	8 — 8¼
No. 1 cl. brass tur.	9¼— 9½	10 —10½
No. 1 comp. turn..	10 —10⅜	10½—11
Lead—		
Tea lead	2 — 2½	3⅜— 3¾
Lead, heavy	4¼— 5	5⅜— 5⅝
Stereotype	6 — 6¼	6⅞— 7⅛
Electrotype	4⅜— 4½	5⅛— 5½
Battery lead	2⅛— 2⅜	2⅞— 3
Mixed babbitt	4½— 5	5⅞— 6⅛
Zinc—		
Zinc scrap	3⅛— 3⅜	3¾— 3⅞
New zinc cuttings..	4 — 4½	5⅛— 5¼
Tin—		
Block tin, scrap...	34⅜—35¼	35¾—37½
Siphon tops	22¼—22½	25 —25¾
Tinfoil, pure	24⅛—25½	26⅛—28¼

CLASSIFIED ADVERTISEMENTS IN THE AUTOMOTIVE DAILY NEWS BRINGS RESULTS

GASOLINE

GASOLINE TANK WAGON PRICES

	Net Tank Wagon.	Road Tax.	Total Tank Wagon.	Service Station.
Greater N. Y. C.	14	2	16	18
Syracuse	16	2	18	20
Rochester	14	2	16	18
Buffalo	14	2	16	18
Albany	16	2	18	20
Burlington, Vt.	16	4	20	22
Manchester N. H.	16	4	20	22
Augusta, Me.	16	4	20	22
Boston, Mass.	16	2	18	20

Pennsylvania

	Net Tank Wagon.	T'l Service Station.
Pittsburgh	15	21
Philadelphia	15	21
Allentown	15	21
Erie	15	19
Scranton	15	21

Prices in Other Markets

	Net Tank Wagon.	Road Tax.	Total Tank Wagon.	Service Station.
Atlantic City	14.5	2	16.5	18.5
Newark	13.5	2	15.5	17.5
Annapolis	14.0	4	18.0	20.0
Baltimore	13.2	4	17.2	19.2
Cumberland	15.0	4	19.0	21.0
Washington	13.7	2	15.7	17.7
Danville	14.8	5	19.8	21.8
Norfolk	13.3	5	18.3	20.3
Petersburg	14.3	5	19.3	21.3
Richmond	13.7	5	18.7	20.7
Roanoke	15.0	5	20.0	22.0
Charleston	14.5	4	18.5	20.5
Keyser	15.1	4	19.1	21.1
Parkersburg	13.2	4	17.2	19.2
Wheeling	14.4	4	18.4	20.4
Charlotte	15.3	5	20.3	22.3
Hickory	15.8	5	20.8	22.8
Mt. Airy	15.5	5	20.5	22.5
Salisbury	15.7	5	20.7	22.7
Charleston	13.3	6	19.3	21.3
Columbia	15.2	6	21.2	23.2

Two cents per gallon discount off gasoline tank wagon price to dealers and commercial buyers.

DAILY CRUDE AVERAGE DROPS 27,600 BARRELS

New York, Jan. 23.—The American Petroleum Institute estimates that the daily average crude oil production in the United States for the week ended January 18, 1930, was 2,661,650 barrels, as compared with 2,689,250 barrels in the preceding week, a decrease of 27,600 barrels. The daily average production east of California was 1,966,350 barrels, as compared with 1,989,550, a decrease of 23,200 barrels.

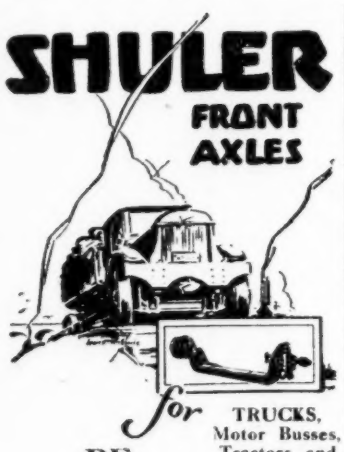
Imports of petroleum, crude and refined oils, at the principal United States ports for the week totaled 1,980,000 barrels, a daily average of 282,857 barrels, compared with 1,868,000 barrels, a daily average of 266,857 barrels for the previous week and a daily average of 264,250 barrels for the four weeks ended January 18.

OPENS USED CAR BRANCH

Englewood, N. J., Jan. 23.—L. F. Jacod & Co., 1875 Broadway, New York city, has opened a new branch showroom at 17 Grand Ave., this city, for the sale of used cars.

SHULER

FRONT AXLES



for TRUCKS, Motor Busses, Tractors and Trailers

BE THERE

A cordial invitation is extended to all who are interested in new developments to visit us at the Blackstone Hotel during the Chicago Show, January 25th to 31st.

FRONT AXLES ONLY

SHULER AXLE CO.
INCORPORATED
LOUISVILLE KENTUCKY
MEMBER OF MOTOR TRUCK INDUSTRIES, INC. OF AMERICA

LUBRICATING OILS

All prices cooperage, f. o. b., New York.

(1-inch immersion test)

Filtered D. 600	44 —45½
Filtered E. 600	38 —40½
Unfiltered, 600 S. R.	32½—35
Unfiltered, 650 S. R.	37½—40
600 Flash, S. R.	40 —42½
630 Flash	42½—44½
Bright stock	51 —52½

RED ENGINE OILS—

(Viscosity at 100.)

300	No. 6½	color	20 —21
250	No. 6	color	18 —20
200	No. 6	color	16 —17

PALE ENGINE OILS—

(Viscosity at 100.)

230	No. 3¼	color	20 —21
180	No. 3¼	color	18 —..
100	No. 2¼	color	.. —16

MOTOR OILS—

(Viscosity at 100.)

600	No. 7	color	30 —32
500	No. 7	color	28 —29
400	No. 6½	color	26 —27
300	No. 6	color	23 —24½
200	No. 6	color	21 —22½

FRANK J. MOONEY JOINS CAMPBELL-EWALD CO.

Detroit, Jan. 23.—H. T. Ewald, president of the Campbell-Ewald Company, announces the appointment of Frank J. Mooney to the copy staff of the agency. Mr. Mooney comes from the D'Arcy Advertising Company, Inc., St. Louis, where he was in charge of the Gardner and Moon accounts. For several years he was advertising manager and later sales manager for the Hupp Motor Car Corporation.

IN NEW POSITION

Boston, Mass., Jan. 23.—Henry C. Adolph, a pioneer in the used-car business of this city, who started to sell used cars back in 1907, has joined the Becker Automobile Company as director of used car sales.

CLARK

Meeting Service Conditions Squarely and "standing the gaff"

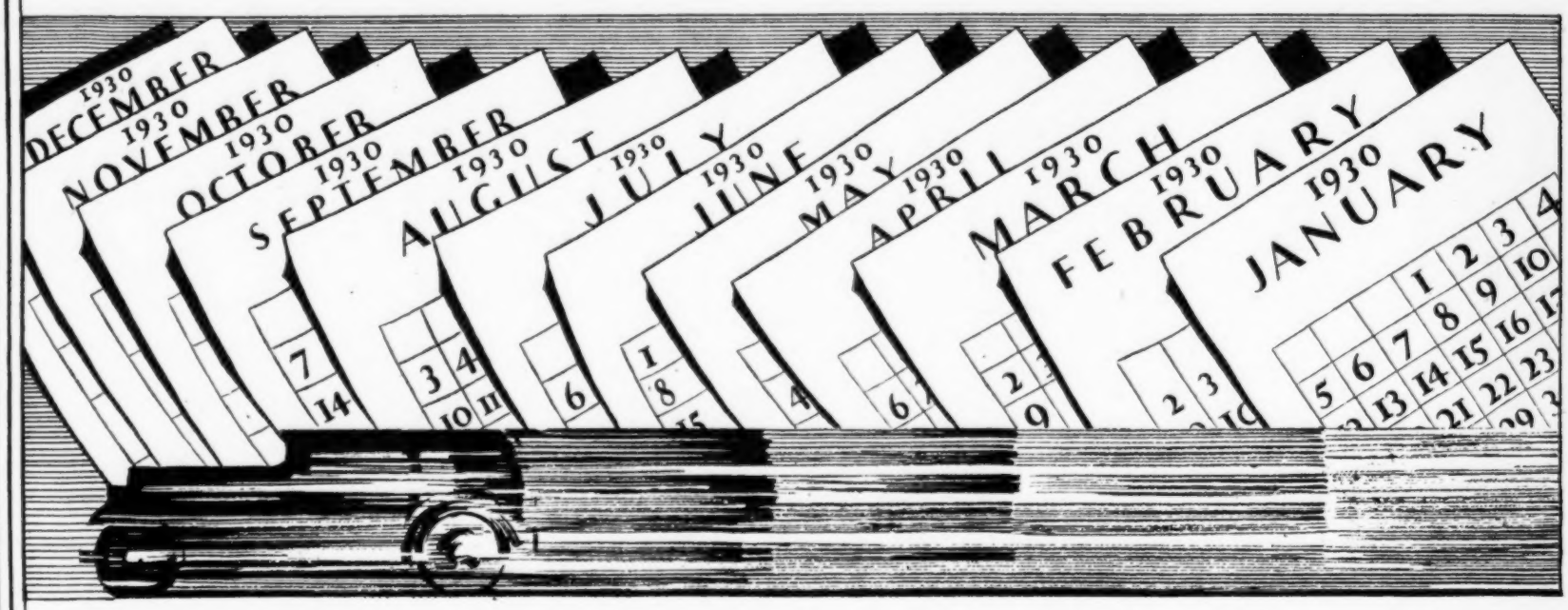
CLARK AXLES and METAL WHEELS

CLARK EQUIPMENT COMPANY
Buchanan Michigan

AXLES
Front & Rear
WHEELS
Single or Dual Tire
CAST STEEL HOUSINGS
TRANSMISSIONS

AMERICAN AUSTIN

the bantam-car...that will



run for a year on 56 dollars worth of gas and oil

Forty miles on a gallon of gasoline. Refilling with oil every 1000 miles requires but two quarts. Twice the average mileage from a set of tires. Figure it out—these operating costs total less than ¾¢ a mile! These are facts of American Austin performance.

But economy is only one side of the surprising sales story of this bantam car. It offers speed, better than fifty miles an hour in high, forty miles an hour in second. And as for easy handling, you can turn it completely around in a thirty-two foot street with a quarter turn of the steering wheel.

The keynote of American Austin design will be smartness. Although its chassis will duplicate the Austin of international fame, winner of 450 cups and medals for performance, bodies will be distinctively American in their smartness. Yet the car will be priced at less than $450.

Every part of the American Austin will be made by American workmen, in American factories, financed and controlled by American capital.

It will make the ideal second car for thousands of American families who have been eagerly waiting for a second car, not only inexpensive to buy, but inexpensive to operate, service, and pay taxes on—a clean field of business with trade-ins at a minimum.

PRE-SHOWING FOR THE TRADE

HOTEL SHERMAN, CHICAGO SHOW WEEK

AMERICAN AUSTIN CAR CO., INC., 7300 WOODWARD AVE., DETROIT, MICH.

THE AMERICAN *Austin*